

# **LET US UNDERSTAND MATHEMATICS**

## **KINDERGARTEN**

Harinder Mahajan  
Former Research Scientist C  
Delhi University

## PREFACE

This is first of a series of books based on NCERT syllabus and research on teaching of mathematics for kindergarten class. The focus here is on laying a foundation for learning of mathematics and understanding of concepts and procedures. Accordingly concepts and procedures are presented by manipulatives, pictures, real world situations, spoken and written words and symbols and opportunities are provided for translation from one mode to another and applications to daily life. The teachers should provide more practice if necessary for mastery of skills and concepts and use objects that are readily available or situations for exercises that are familiar to the children in the class.

The schools that can should provide ample quantities of materials such as counters, interlocking cubes, base ten attribute and pattern blocks, tiles, geometrical models, geoboards. The children should at least have twenty sticks of the same length and colour and models of different 2-D and 3-D shapes. They can be asked to bring buttons, keys, empty boxes, containers of different shapes and sizes.

As for most teachers textbook is the curriculum this book is a teaching guide cum workbook for students. As the children have not developed the reading skills, the teacher is expected to explain with the help of examples. The exercises with manipulatives and oral work are included to facilitate the teacher's work. Some activity sheets are also provided that can be removed and used by students.

## TABLE OF CONTENTS

Unit 1	Identification and Comparison of Attributes
Unit 2	Concept of Numbers 1 To 5
Unit 3	Concept of Numbers 6 To 9
Unit 4	Comparison of Numbers 1 To 9
Unit 5	Addition of Two Numbers Whose Sum Does Not Exceed 9
Unit 6	Subtraction of Two Numbers When the Larger Number Does Not Exceed 9
Unit 7	Concept of Numbers 0 And 10 To 20
Unit 8	Addition of One Digit Numbers
Unit 9	Subtraction of Numbers when the Larger Number Does Not Exceed 18
Unit 10	Ordinal Numbers
	Activity Sheets

# UNIT 1

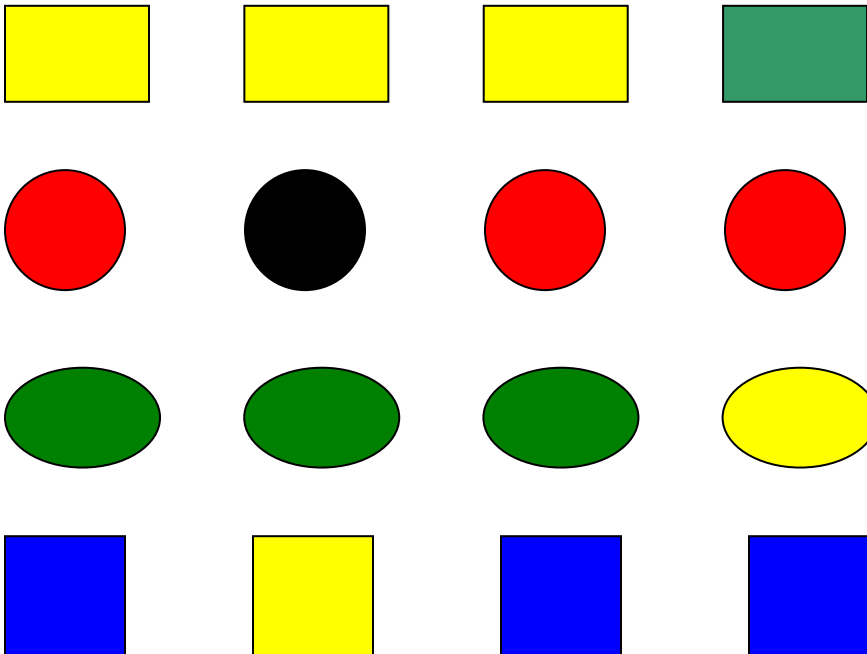
## Identification and Comparison of Attributes

Give or show students blocks, buttons or keys of different colours, shapes and sizes and ask them to

1. Describe a block, button or key.
2. Tell how two blocks buttons or keys are alike?
3. Tell how two blocks, buttons or keys are different?
4. Sort the blocks, buttons or keys that are similar in some way and tell how are they similar?
5. Can you sort them so that they are similar in a different way?
6. What things you need to sort at home and when? (e.g. clothes after washing, vegetables, fruits, groceries after shopping)
7. Could you use more than one property or attribute for sorting?

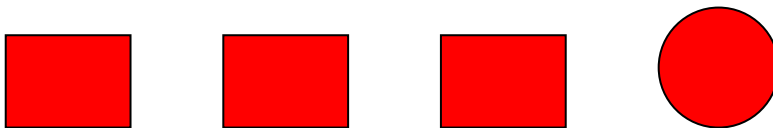
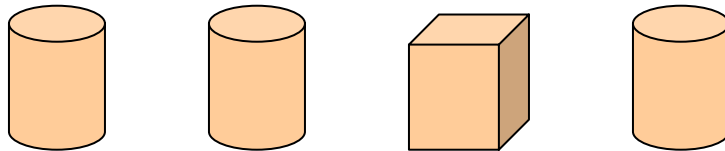
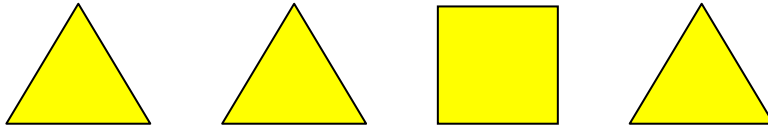
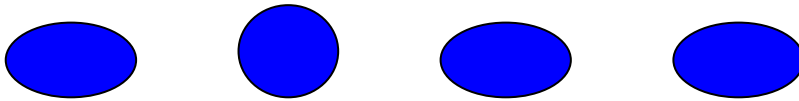
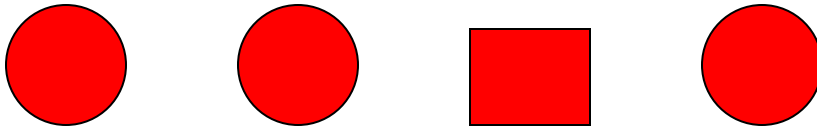
### Concept of colour, shape and size

1. Mark an X under the picture or drawing that is different in each set and explain how?

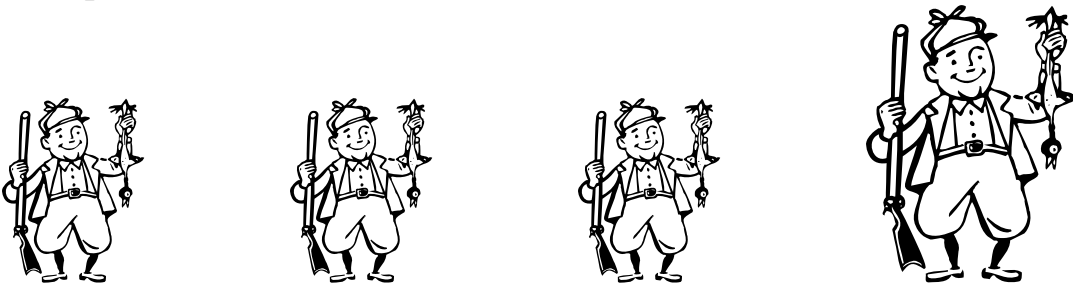


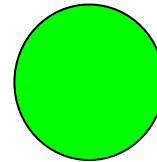
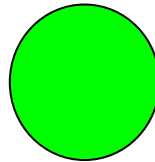
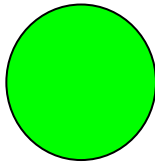
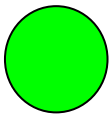
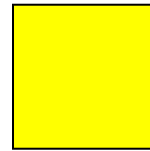
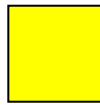
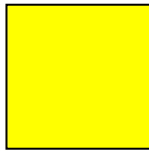
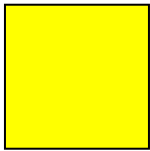
2.

3. Mark an X under the picture or drawing that is different in each set and explain how?



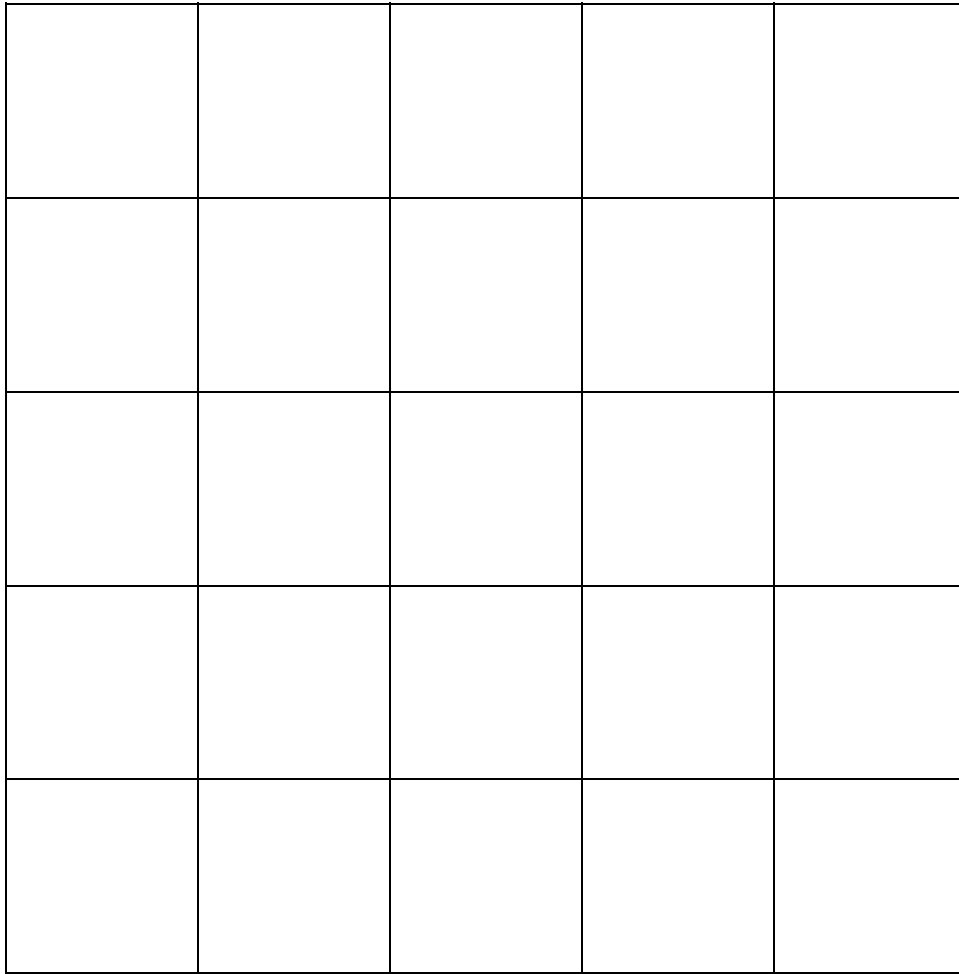
4. Mark an X under the picture or drawing that is different in each set and explain how?





5. Cut and sort the shapes given in Activity Sheet 1.1 according to colour and paste figures with same colour in different columns(explain what is a table, column, row and cell by showing examples) in the table given below:

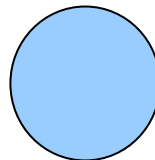
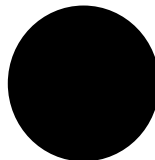
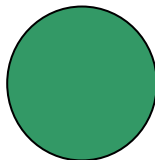
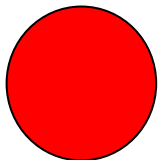
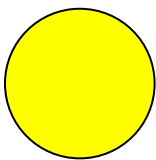

5. Cut and sort the shapes given in Activity Sheet 1.2 according to shape and paste figures with the same shape in different columns in the table given below:



## 1.2 Identification of colours, shapes, and positions

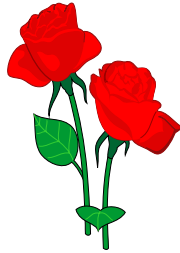
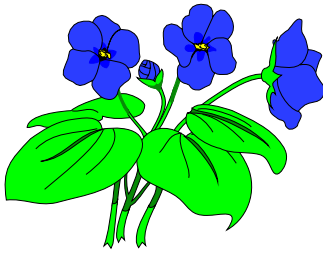
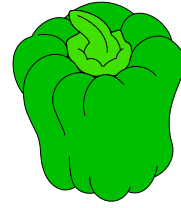
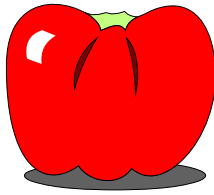
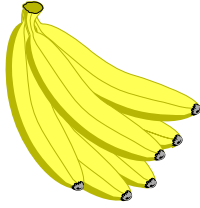
### Colours

1. Give many examples and non examples of different colours
2. Name the colour of the circles given below:





3. Name the colour of the following:



4. Name the colour of the following objects:

Grass

Sky

Tomato

Mango

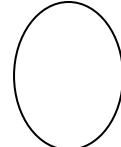
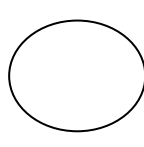
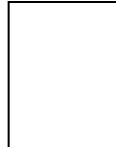
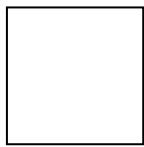
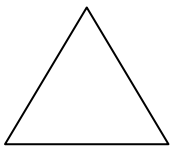
Black Board

5. Name the colours of shapes you had pasted earlier.

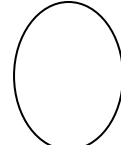
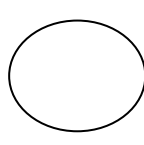
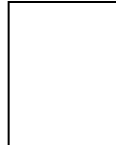
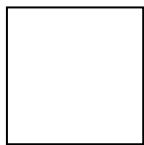
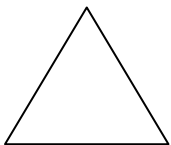
### Shapes

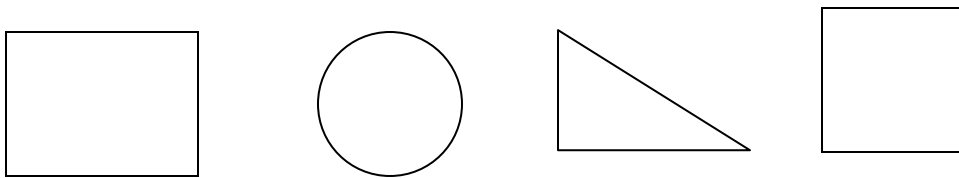
1. Show many examples of triangles, squares, rectangles, circles and ovals in different sizes and orientations using chips or cardboard models.

2. Name the shapes given below:



Colour the circles green, squares red, rectangles yellow, ovals black and triangles blue.

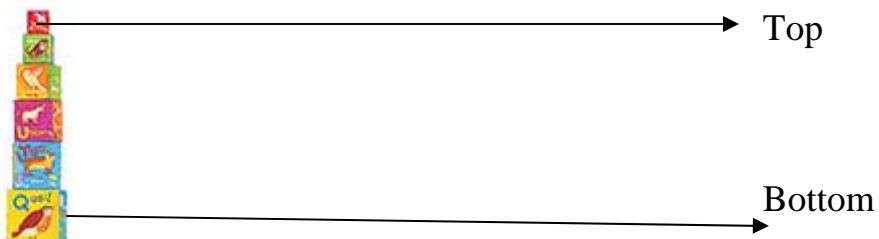
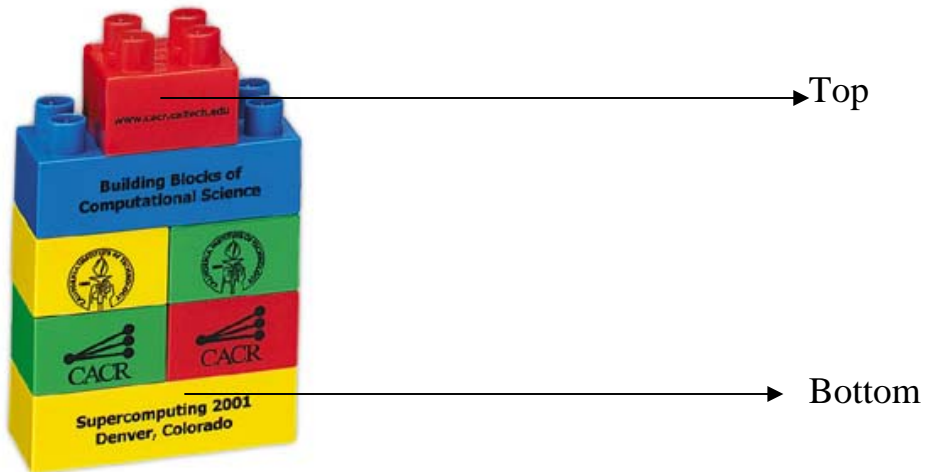




3. Draw a circle with the help of a coin, bangle or any other circular object.
4. Make a square, a rectangle, and a triangle using toothpicks or matchsticks.
5. Name objects which have the same shape as a
  - Square
  - Rectangle
  - Circle

## Position

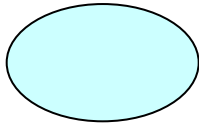
### Top and bottom



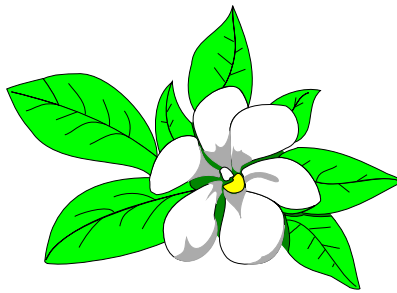
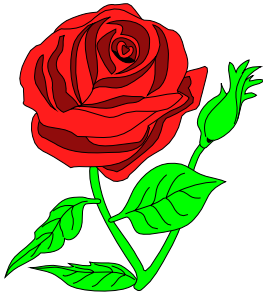
1. Make a tower of blocks and point to the blocks at the top and bottom
2. Point to the shelf at the top and bottom of a cupboard in the classroom.
3. Point to the notebook at the top and bottom for a pile of notebooks.

### Left and right

1. Show your left hand.
2. Show your right hand.
3. Tell the name of child sitting on your right.
4. Tell the name of child sitting on your left.
5. Is the door in the classroom on your left or right?
6. Mark a  $\checkmark$  under the figures given below on the left.



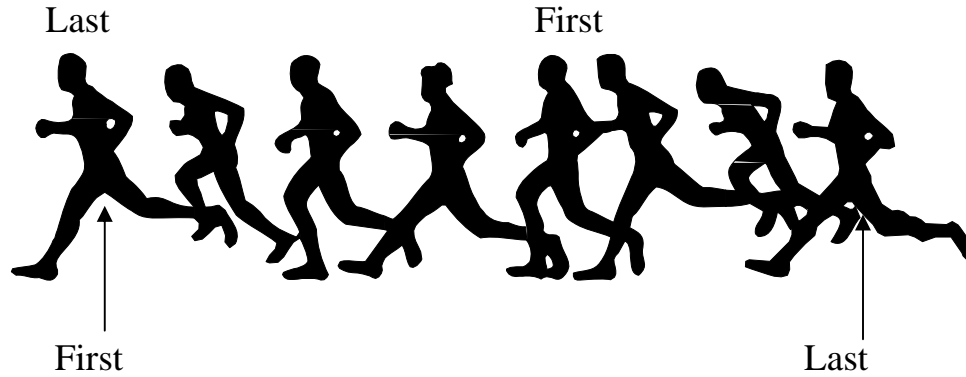
7. Mark a  $\checkmark$  under the flower on the right.



### First and last

When people or things are arranged in order one ahead of all or in the beginning is called **first** and the one behind all or in the end is called **last**.





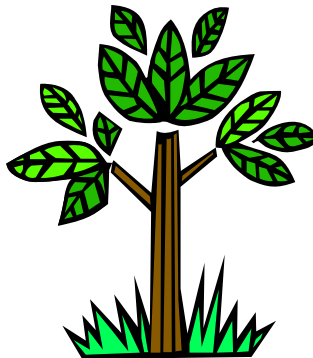
First				Last
-------	--	--	--	------

1. Point to the first line of the page in your book.
2. Point to the last line of the page in your book.
3. Name the first and last child in a queue of children.

### 1.3 Comparison of attributes of height, length, thickness and capacity

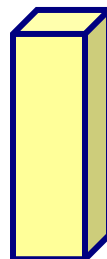
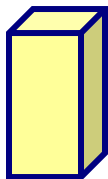
#### Height

1. Ask children to compare height of readily available objects in the environment such as children, plants, children's desk and teacher's table by asking questions such as:  
Tell which of the two specific objects is taller?  
Tell which of the two specific objects is shorter?  
Point to two objects that are about the same height?
2. Compare the sets of objects given below and place a  $\checkmark$  under the object that is taller.



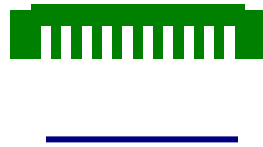
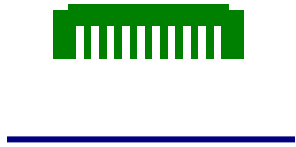


3. Compare the sets of objects given below and place a  $\checkmark$  under the object that is shorter.

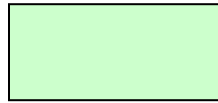


## Length

1. Give examples of shorter and longer using a set of objects
2. Ask children to compare length of readily available objects in the environment such as pencil and pen, sticks, lines and arrows drawn on the black board by asking questions such as:  
Tell which of the two specific objects is longer?  
Tell which of the two specific objects is shorter?  
Name two objects that are about the same length?
3. Compare the length of sets of objects given below and place a  $\checkmark$  under the object that is longer.



1. Compare the length of sets of objects given below and place a  $\checkmark$  under the object that is shorter.

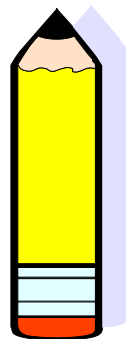


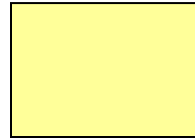
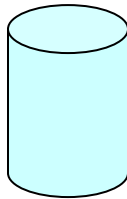
## Thickness

1. Give examples of thick and thin using a set of objects
2. Ask children to compare thickness of readily available objects in the environment such as pens, pencils, crayons, chalk by asking questions such as:  
Tell which of the two specific objects is thicker?  
Tell which of the two specific objects is thinner?  
Are there any objects that are about the same thickness?
3. Compare the sets of objects given below and place a  $\checkmark$  under the object that is thicker or wider.



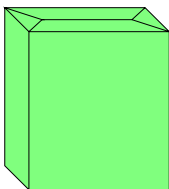
4. Compare the sets of objects given below and place a  $\checkmark$  under the object that is thinner or narrower.



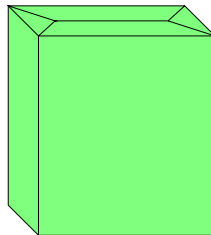


## Capacity

1. Give examples of a set of containers that will hold more or less water or sand
2. Ask children to bring plastic bottles, jars, and cardboard boxes and ask questions such as:  
Tell which of the two specific containers can hold more water or sand?  
Tell which of the two specific containers will hold less water or sand?  
Point to two containers that will hold about the same amount of water or sand?  
Verify it by pouring water or sand from one container to the other.
3. Which of the following sets of containers will hold more water or sand place a  $\checkmark$  under it.

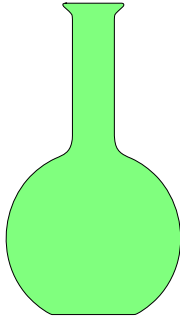


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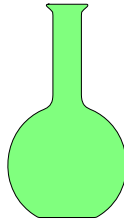


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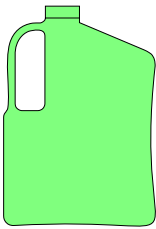


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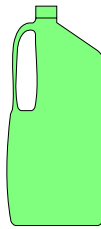


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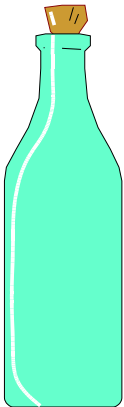
4. Which of the following sets of containers will hold less water or sand  
place a  $\checkmark$  under it.



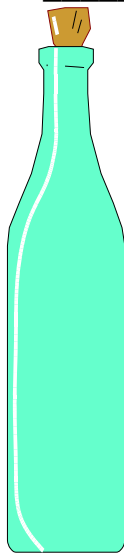
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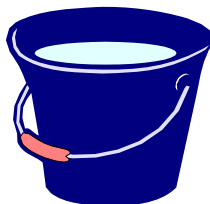
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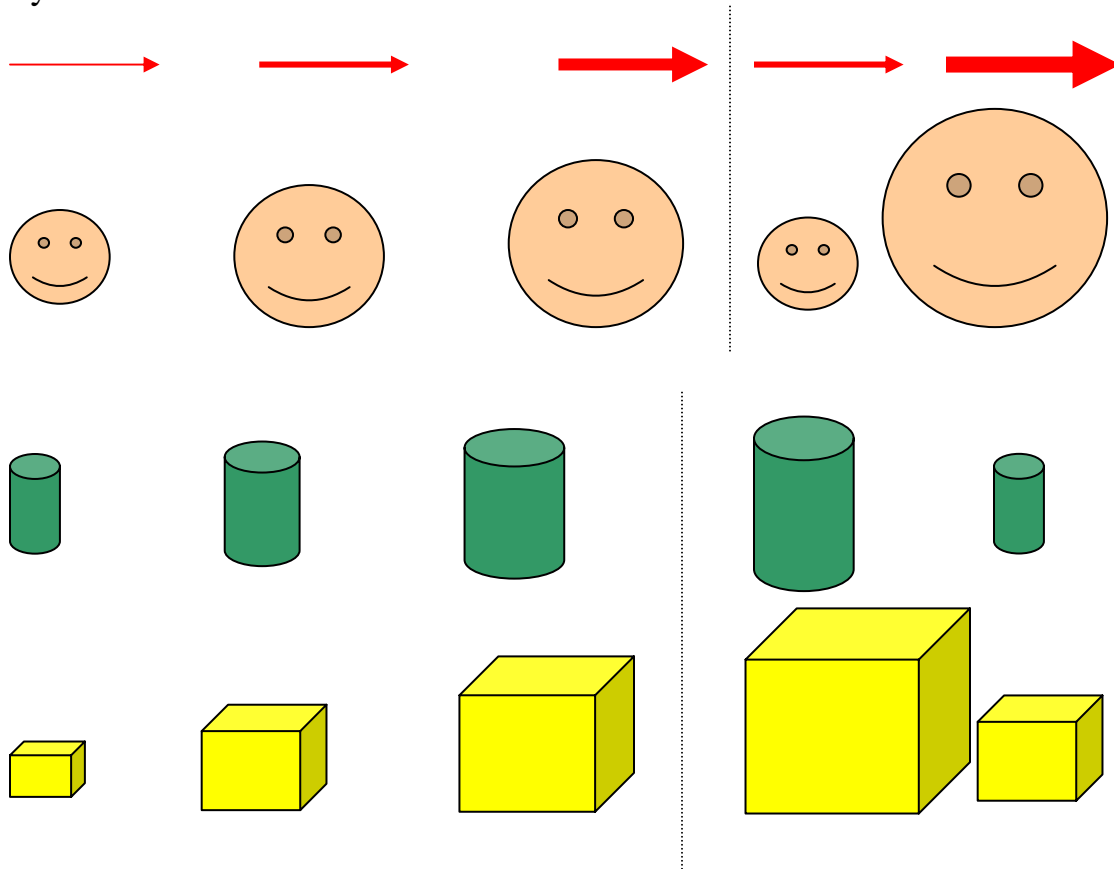
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## Patterns

Show patterns like ABABAB...ABC, ABC, ABC...AAB, AAB, AAB... by clapping of hands, stamping of feet, blocks or chips of different colours, shapes and sizes and varying one attribute at a time and asks students to copy the pattern, add more blocks to the pattern and describe the pattern. Look at the pattern of pictures on the left of the line and mark a  $\checkmark$  under one of the pictures on the right that will come next and describe the pattern orally:



## UNIT 2

### Concept of Numbers 1 to 5

#### Concept of one

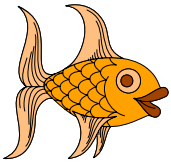
These are pictures of one animal. We write one like this - 1



1



1



1

Trace and write 1 in each cell:

1	1	1	1	1	1	1	1	1	1

## Concept of two

These are pictures of two birds. We write two like this-2.



2



2



2

Trace or write 2 in each cell

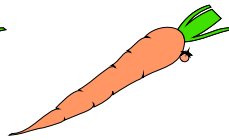
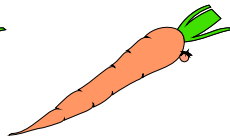
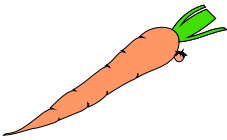
2	2	2	2	2	2	2	2	2	2

## Concept of three

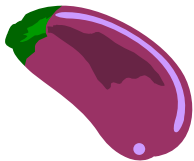
These are pictures of three vegetables. We write three like this-3.



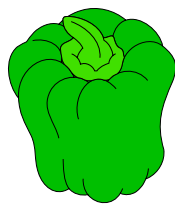
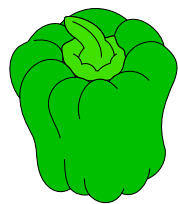
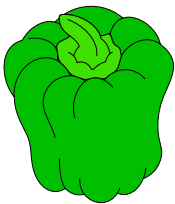
3



3



3



3

Trace or write three in each cell

3	3	3	3	3	3	3	3	3	3

## Concept of four

These are pictures of four insects. We write four like this-4.



4



4



4



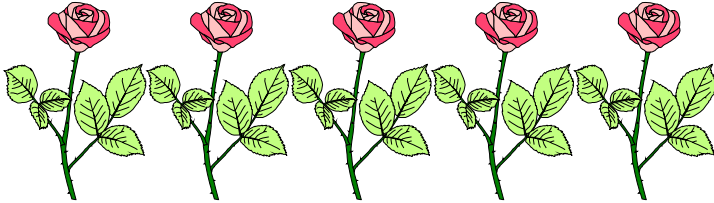
4

Trace or write four in each cell

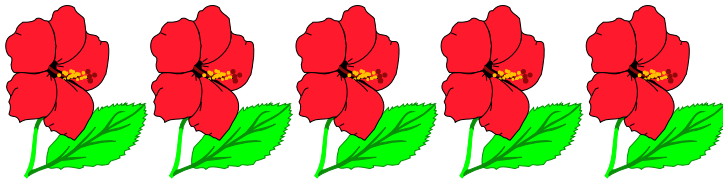
4	4	4	4	4	4	4	4	4	4

## Concept of five

These are pictures of five flowers. We write five like this-5.



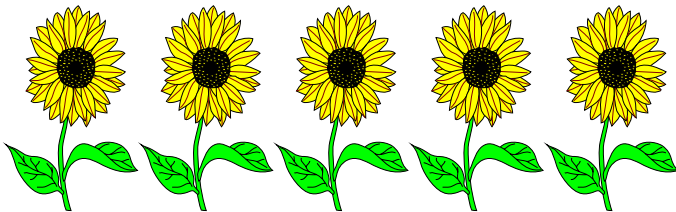
5



5



5



5

Trace or write five in each cell

5	5	5	5	5	5	5	5	5	5

## **Exercise 2.1**

1. How many doors are there in your classroom?
2. How many fingers do you have in a hand?
3. How many eyes do you have?
4. How many windows are there in your classroom?
5. How many blackboards are there in your classroom?
6. How many fans are there in your classroom?
7. How many lights are there in your classroom?
8. Set aside the following number of sticks  
2, 4, 5, 1 and 3.



## Exercise 2.2

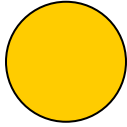
### Writing of numerals 1 to 5

Complete each row by writing the numerals given at the beginning of the row:

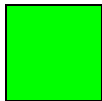
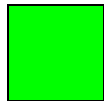
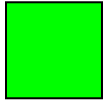
1								
1								
2								
2								
3								
3								
4								
4								
5								
5								

### Exercise 2.3

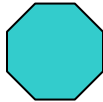
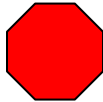
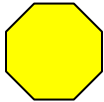
Match the number of objects in each collection with the correct number by drawing lines



1



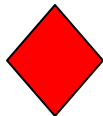
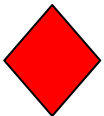
2



3



4



5

## Exercise 2.4

Write the number of objects in each collection under it.



\_\_\_\_\_



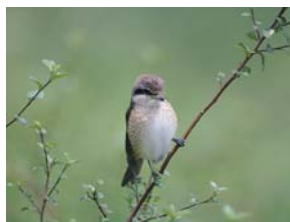
\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_

## Exercise 2.5

Draw as many objects as the numbers given below against the numbers:

2                      ○   ○

1

3

5

4

2

## Exercise 2.6

Shade or colour 2 blocks

--	--	--	--	--

Shade or colour 4 blocks

--	--	--	--	--

Shade or colour 3 blocks

--	--	--	--	--

Shade or colour 5 blocks

--	--	--	--	--

### Exercise 2.7

Cut and sort the shapes given in Activity Sheet 2.1 according to shape and paste similar shapes in the same column beginning with the smallest number of shapes in the table given below:


## Counting

1. Colour or shade in each column as many blocks as the number shown at the bottom of the column.

1	2	3	4	5

2. Fill in blanks:

2 is \_\_\_\_ more than 1.

3 is \_\_\_\_ more than 2.

4 is \_\_\_\_ more than 3.

5 is \_\_\_\_ more than 4.

Thus 1 is the smallest number and 5 is the largest number.

Saying the numbers in order from smallest to largest that is 1, 2, 3, 4, 5 is called **counting**.

Saying the numbers in order from largest to smallest that is 5, 4, 3, 2, 1 is called **counting back**.

### **Exercise 2.8**

1. Count from 1 to 5.
2. Write all the numbers in order from 1 to 5.
3. Count back from 5 to 1.
4. Write all the numbers in order from 5 to 1.
5. Read the following numbers:  
1, 4, 5, 3 and 2.
6. Write the following numbers to be dictated by teacher:  
3, 5, 1, 2 and 4.



## UNIT 3

### Concept of numbers six to nine

We need to learn more numbers to describe collections having more than five objects, a different number for each collection as the number of objects increases by one.

### Concept of six

Five and one more is six. We write six like this-6.  
The collections given below have 6 objects:

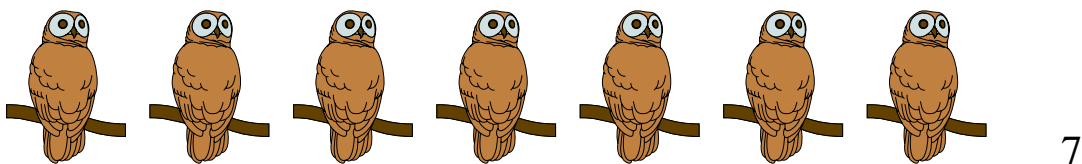


Trace or write 6 in each cell

6	6	6	6	6	6	6	6	6	6

## Concept of seven

Six and one more is seven. We write seven like this-7.  
The collections given below have 7 objects:



Trace or write 7 in each cell.

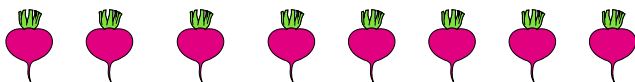
7	7	7	7	7	7	7	7	7	7

## Concept of eight

Seven and one more is eight. We write eight like this-8.  
The collections given below have 8 objects:



8



8



8



8



8



8

Trace or write 8 in each cell.

8	8	8	8	8	8	8	8	8	8

## Nine

Eight and one more is nine. We write nine like this-9.  
The collections given below have 9 objects:



9



9



9



9



9



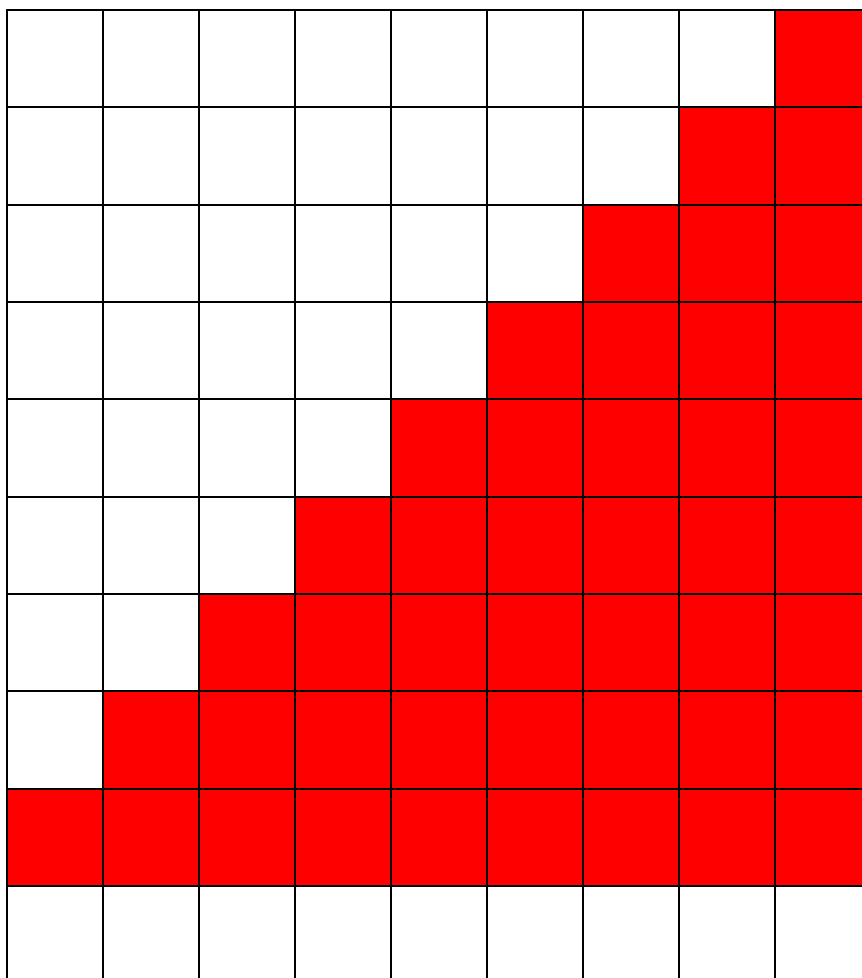
9

Trace or write 9 in each cell

9	9	9	9	9	9	9	9	9	9

## Counting numbers from 1 to 9

### Counting



Ask the students how many cells are shaded in each column and ask them to write the number in that column in the space provided.

This shows 2 is 1 more than 1.

This shows 3 is 1 more than 2.

This shows 4 is 1 more than 3.

This shows 5 is 1 more than 4.

This shows 6 is 1 more than 5.

This shows 7 is 1 more than 6.

This shows 8 is 1 more than 7.

This show 9 is 1 more than 8.

Saying numbers in order from smallest to largest-1, 2, 3, 4, 5, 6, 7, 8, 9 is called **counting**

Provide practice in counting back from 9 to 1, till students are fluent in it.

Counting helps us to find the number of objects and set aside a number of objects.

When the number of objects is large, it may be difficult by just looking at it to find out how many objects are there. We can find the number of objects by pointing to each object a different one as we say each number in counting. The number that we say when we point to the last object gives the number of objects.

Demonstrate it by examples.

Similarly we can set aside a given number of objects by setting aside one object as we say each number in counting till the given number.

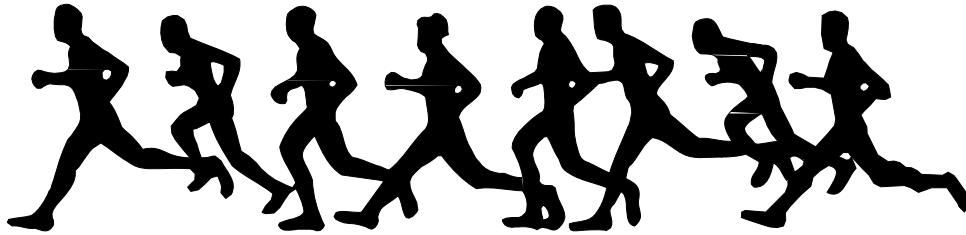
Demonstrate it by examples.

Saying numbers from largest to smallest-9, 8, 7, 6, 5, 4, 3, 2, 1 is called **counting back**.

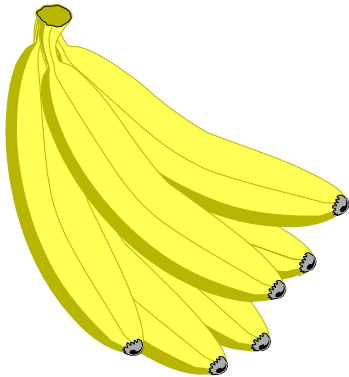
Provide practice in counting back from 9 to 1.

### Exercise 3.1

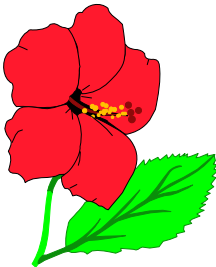
1. Count from 1 to 9.
2. Count back from 9 to 1.
3. How many fingers does one hand have?  
How many legs does a chair have?  
How many wings does a bird have?
4. Tell how many runners are running in the race?



How many bananas does the bunch given below have?



How many petals does the flower given below have?



5. Give them a specific numbers of objects and ask them how many objects are there?

6. Set aside the following numbers of sticks:

2, 5, 7, 9, 8, 3, 4, 6 and 1.

7. Where do you see numbers in your day- to-day life?

8. Read the following numbers:

8, 4, 3, 2, 7, 9, 1, 6 and 5.

9. Write missing numbers in counting from 1 to 9.

1					6			9
---	--	--	--	--	---	--	--	---

10. Write missing numbers in counting back from 9 to 1.

9					4			1
---	--	--	--	--	---	--	--	---

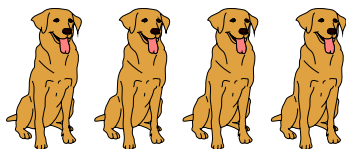
11. Write the following numbers (to be dictated by teacher)

6, 8, 3, 9, 1, 4, 2, 5, 7, 9, 4, 6, 8, 3, 7, 2, 1



## Exercise 3.2

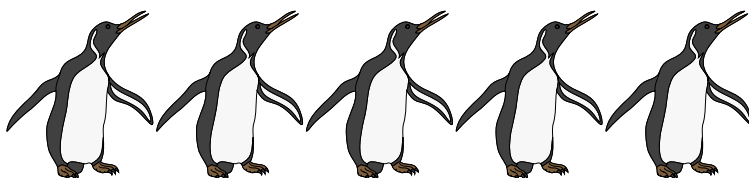
Match the number to the collection having that many objects by joining them with lines:



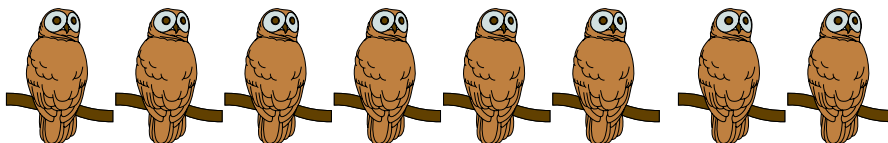
5



4



6



8



7



9



6

### Exercise 3.3

Write the number of objects in each collection against it:



—



—



—



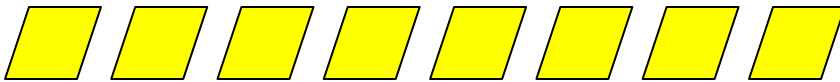
—



—



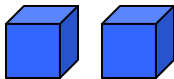
—



—



—



—

### Exercise 3.4

Draw as many lines as the numbers against them:

5      | | | | |

3

1

4

8

6

9

2

7

### Exercise 3.5

Write numbers  
that come just  
after the following  
numbers

7	8
4	
5	
3	
6	
2	
8	
1	
7	

Write numbers  
that come just  
before the  
following  
numbers

5	6
	3
	8
	9
	7
	5
	2
	6
	4

Write numbers  
that come  
between the  
following  
numbers

6	7	8
4		6
3		5
1		3
5		7
2		4
7		9
6		8
4		6

### Exercise 3.6

Write all numbers in counting beginning with the given number against it:

4 – 5, 6, 7, 8, 9.

6 -

7 -

8 -

5 -

2 -

1 -

3 -

### Exercise 3.7

Write all numbers that come counting back beginning with the given number against it:

4 – 3, 2, 1.

2 -

7 -

3 -

6 -

8-

9 -

5 -

### Exercise 3.8

Write all numbers that come between the following numbers.

2	3	4	5	6
1				5
4				7
3				6
5				9
4				8
7				9
6				6
5				7

### Exercise 3.9

Write the numbers in the boxes that come after the following numbers in counting:

4	5	6	7	8
---	---	---	---	---

6		
---	--	--

5				
---	--	--	--	--

3				
---	--	--	--	--

7		
---	--	--

2				
---	--	--	--	--

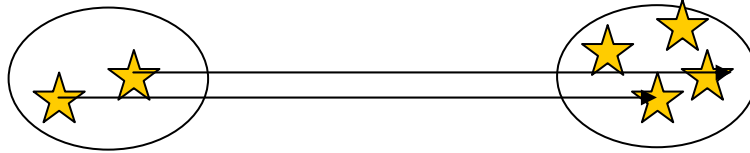


## UNIT 4

### Comparison of numbers 1 to 9

Show many collections of objects or children in class and ask how many objects or children each group have, which has more objects or children

We can compare two collections of objects by matching each object of one collection with one object of the other collection. The collection in which some objects are left over has more objects.

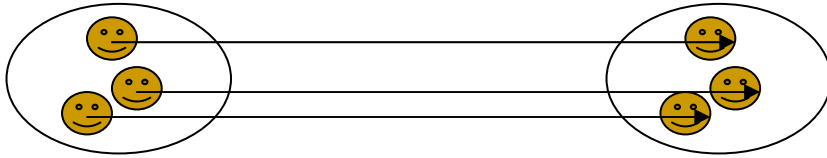


For example in the collections given above when we match the objects two objects are left in the collection on the right. Therefore it has more objects.

The number that gives the number of objects in the larger collection is said to be greater than the number that gives the number of objects in the smaller collection. As there are 4 objects in the larger collection and 2 in the smaller collection we say four is **greater than** two.

The number that gives the number of objects in the smaller collection is said to be less than the number that gives the number of objects in the larger collection. As there are 2 objects in the smaller collection and 4 in the larger collection we say two is **less than** four.

If there are no objects left in any collection after matching objects as in the collections given below. Both collections have the same number of objects and the number of objects are said to be equal.



### Exercise 4.1

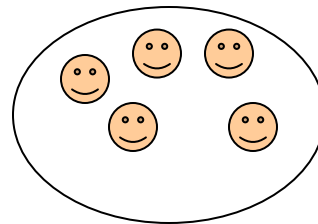
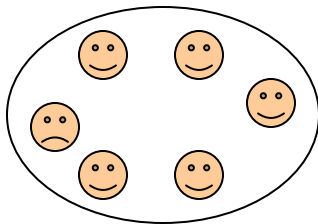
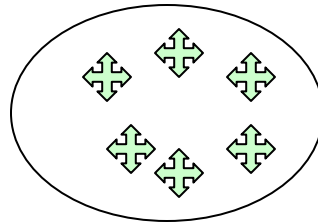
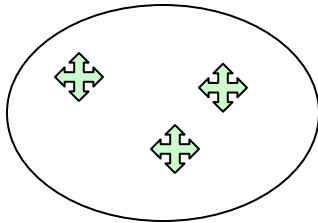
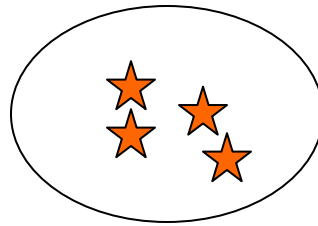
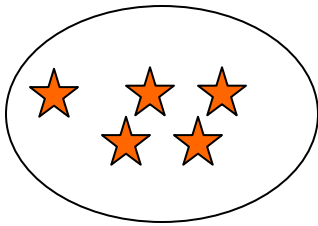
1. Are there more windows or doors in the classroom?
2. Are there fewer desks or chairs in the classroom?
3. Are there as many chairs as children in the classroom?
4. There are 5 sparrows and 7 crows sitting on a tree. Are there more sparrows or crows?
5. Arun has 5 rupees and Hina has 2 rupees. Who has more money?
6. Arti has 3 dolls and Rani has 5 dolls. Who has more dolls?
7. Set aside two heaps of the following number of sticks.  
Compare the two heaps and tell how many more one heap has than the other.
  - 1, 3.
  - 1, 2.
  - 2, 2.
  - 2, 4.
  - 3, 3.
  - 5, 3.
  - 6, 3.
  - 4, 7.
  - 5, 2.
  - 8, 4.
  - 9, 5.

## Exercise 4.2

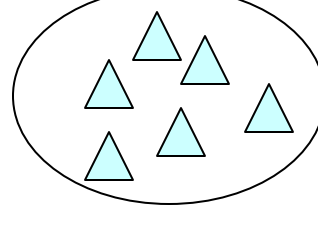
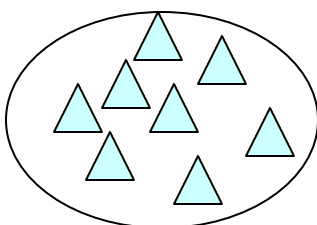
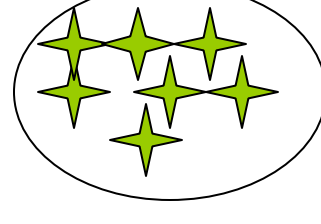
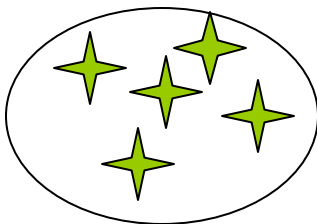
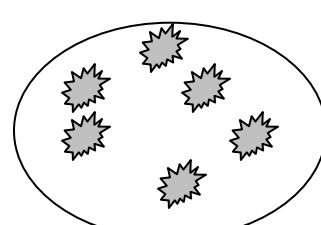
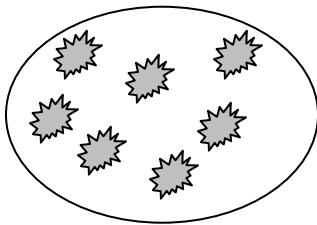
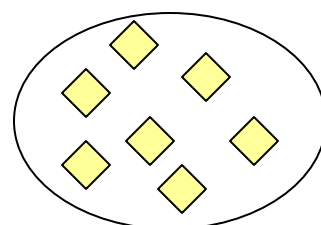
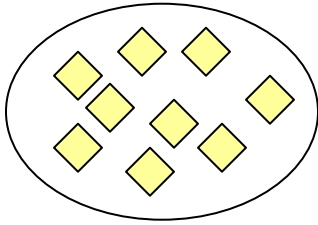
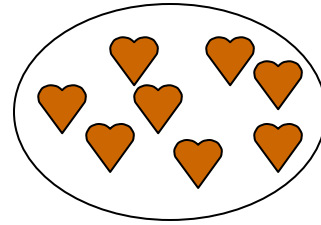
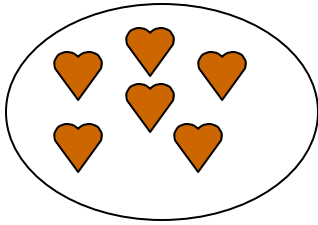
1. Draw as many lines as shown on the left:



2. Mark a  $\checkmark$  under the collections that has more objects.



Mark a  $\checkmark$  under the collections that has fewer objects



### Exercise 4.3

Write all numbers that are greater than or less than the following numbers.

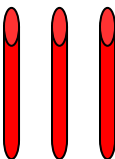
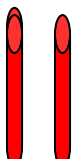
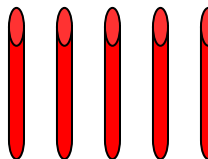
Number	Numbers greater than the number
4	6, 5, 7, 9, 8
2	
7	
5	
8	

Number	Numbers less than the number
4	1,2,3
2	
7	
5	
9	

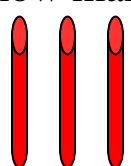
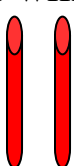
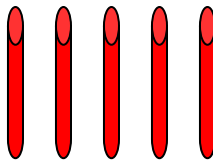
## UNIT 5

### Addition of two numbers whose sum does not exceed 9

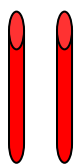
Set aside three sticks and two sticks in two separate heaps and combine the two. How many sticks does the combined heap have? (five)

Combining  and  gives 

If we set aside three sticks and add two more sticks to the heap, how many sticks will we have? (five).

 and  more gives 

If there are three children playing in a room and two more come and join them how many children will there in the room? (5)



We express these in symbols as  $3 + 2 = 5$ . This is read as three **plus** two is equal to five. We also say **sum** of 3 and 2 is five.

## Exercise 5.1

Teacher asks students to set aside two separate heaps of the following number of sticks/blocks. Combine the two and find the number of sticks/blocks in the combined heap:

1. 1, 2. →
2. 3, 2. →
3. 2, 2. →
4. 1, 3. →
5. 3, 5. →
6. 4, 5. →
7. 3, 4. →
8. 2, 5. →
9. 7, 2. →
10. 1, 8

Teacher asks the students to set aside the number of sticks/blocks given below on the left, and then add the number of sticks given on the right and find the number of sticks/blocks that they will now have:

1. 1, 1. →
2. 2, 1. →
3. 4, 1. →
4. 2, 2. →
5. 3, 3. →
6. 4, 2. →
7. 5, 2. →
8. 4, 3. →
9. 7, 2. →
10. 6, 3. →



## Exercise 5.2

How many in all? Write the number.



1

+



1

=



2

+



2

=

\_\_\_\_\_



1



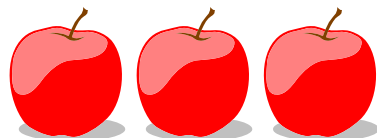
+



2

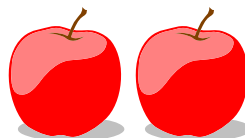
=

\_\_\_\_\_



3

+



2

=

\_\_\_\_\_



3

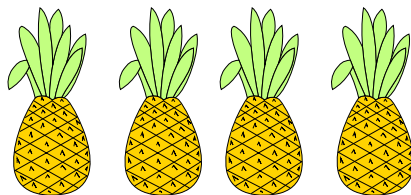
+



3

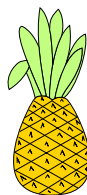
=

\_\_\_\_\_



4

+



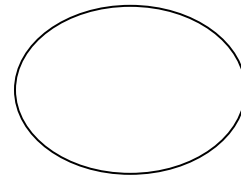
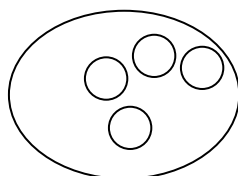
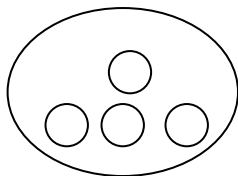
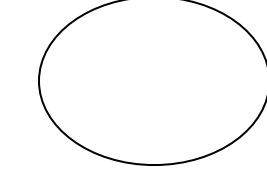
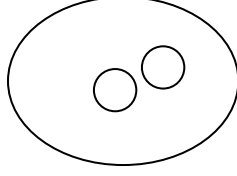
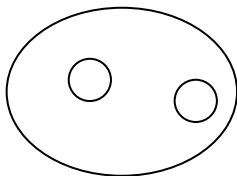
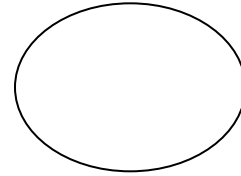
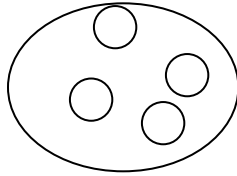
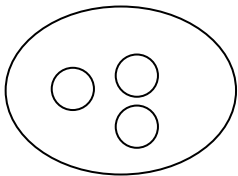
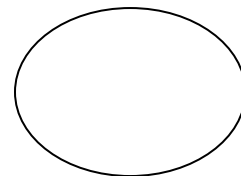
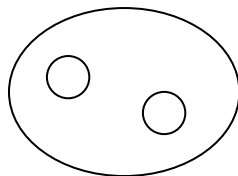
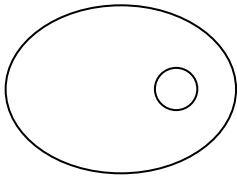
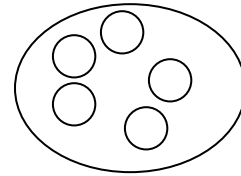
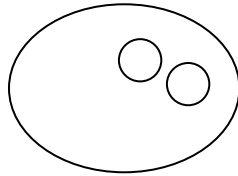
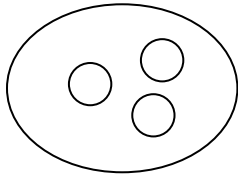
1

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### Exercise 5.3

In the following questions, draw the number of objects in combined collection on the right of  $\rightarrow$  sign when objects in two collections on the left side are combined:



### Exercise 5.3

Write the sum of the following numbers. You may use sticks or draw lines.

1.  $1 + 2 = 3$

2.  $2 + 4 =$

3.  $6 + 3 =$

4.  $4 + 4 =$

5.  $5 + 3 =$

6.  $5 + 4 =$

7.  $6 + 2 =$

8.  $7 + 2 =$

9.  $8 + 1 =$

10.  $6 + 2 =$

### Exercise 5.4

Solve the following problem orally:

1. You had one toffee your sister gave you one more toffee. How many toffees do you have now?
2. A baby takes 3 steps and then 2 more. How many steps did he take in all?
3. Mohit ate 1 apple and 2 bananas. How many fruits did he eat?
4. Arjun had 4 toys and he bought 3 more. How many toys does he have now?
5. There were 5 birds sitting on a tree 3 more came and joined them. How many birds are on the tree now?
6. There were 3 girls and 2 boys in a group dance. How many children are in the group dance?
7. Rita bought 6 coloured and 2 black pencils. How many pencils did she buy?
8. Ajay is 2 years older than his brother. If his brother is 7 year old. How old is Ajay?
9. Shamim had 5 frocks. She got a new frock on her birthday. How many frocks does she have now?
10. David's mother gave him two rupees and his father gave him 5 rupees. How many rupees does he have now?

## Exercise 5.5

Add

$$\begin{array}{r} 1 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +1 \\ \hline \end{array}$$

-----

$$\begin{array}{r} 4 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +4 \\ \hline \end{array}$$

-----

$$\begin{array}{r} 6 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +1 \\ \hline \end{array}$$

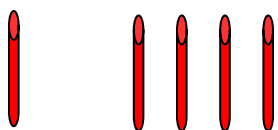
$$\begin{array}{r} 2 \\ +6 \\ \hline \end{array}$$

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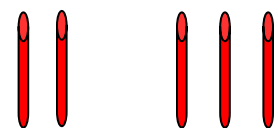
## Exercise 5.6

Divide the following number of sticks in two collections in as many ways as you can and write the corresponding addition facts:

5-Five sticks can be divided into two collections in following manner, which show



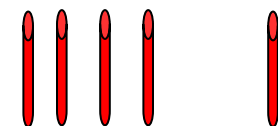
$$1 + 4 = 5$$



$$2 + 3 = 5$$



$$3 + 2 = 5$$



$$4 + 1 = 5$$

3

4

6

7

8

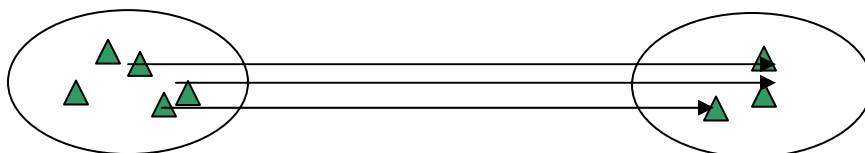
9

## UNIT 6

### Subtraction of Numbers When the Larger Number Does Not Exceed 9

Teacher may demonstrate the following as models for subtraction:

1. Set aside a certain number of sticks say 5 and take away a smaller number of sticks from these say 3 and show that 2 are left.
2. Set aside, 5 sticks and 3 sticks in two separate heaps and match sticks in the two heaps to show that 2 sticks are left over in the heap with 5 sticks. That is the heap with 5 sticks has 2 more than the other heap.
3. Draw 5 lines and strike off 3 of these lines two lines are left.  
| | |||
4. Match objects in the two collections of objects given below by drawing lines, and show that 2 objects are left over in the collection on the left. Therefore the collection on the left has 2 more objects than the collection on the right.



5. If there are 5 birds sitting on a tree and 3 fly away 2 birds are left.

We can represent all of these by a **subtraction statement**

$5 - 3 = 2$ . We read this as five **minus** three is equal to two.

We can also say five is 2 more than 3 or difference between 5 and 3 is 2.



## **Exercise 6.1**

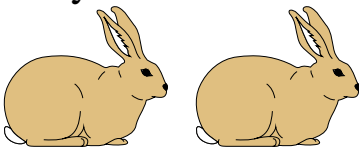
### **Activities with sticks**

1. Ask children to set aside a certain number (1-9) of sticks and then remove a number of sticks less than or equal to the number set aside and tell how many sticks are left.
2. Ask children to set aside two heaps of certain number of sticks and ask which heap has more? How many more? Which heap has less? How many less?  
Provide practice using different sets of numbers.
3. If one heap has 4 sticks, make another heap that has 3 more sticks.
4. If one heap has 5 sticks, make another heap that has 2 sticks less than this?
5. Repeat 3 and 4 using different numbers.

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## Exercise 6.2

How many are left after some of these given on the left fly or go away

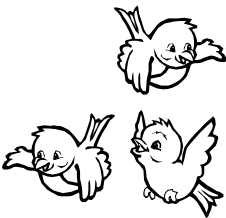
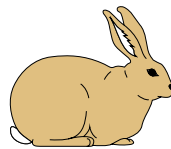


2

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1

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3

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1

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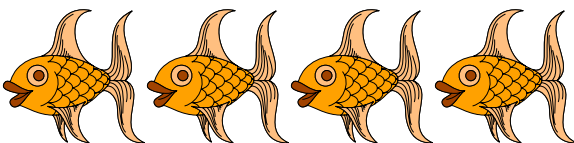


3

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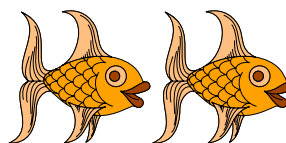


4

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2

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## Exercise 6.2

Some lines are given below. If you strike off the number of lines shown against it, how many will remain? Write in the space provided for it:

Lines	Write the number of lines	Strike off from these number of lines given below	Write the number of remaining lines
		1	
		1	
		2	
		1	
		3	
		2	
		3	
		5	
		4	
		6	
		3	
		4	
		5	
		2	
		5	

### Exercise 6.3

Read subtraction statements given below and verify those using sticks or lines:

1.  $7 - 6 = 1$

2.  $3 - 1 = 2$

3.  $5 - 4 = 1$

4.  $8 - 4 = 4$

5.  $2 - 1 = 1$

6.  $6 - 2 = 4$

7.  $9 - 4 = 5$

8.  $8 - 6 = 2$

9.  $7 - 4 = 3$

10.  $9 - 5 = 4$

11.  $8 - 4 = 4$

12.  $9 - 6 = 3$

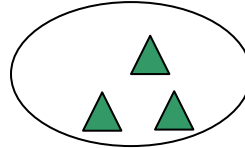
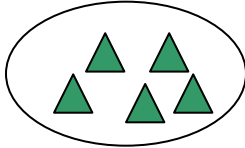
13.  $7 - 5 = 2$

14.  $8 - 5 = 3$

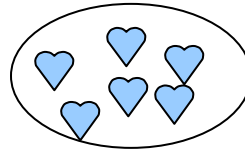
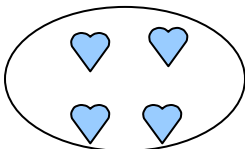
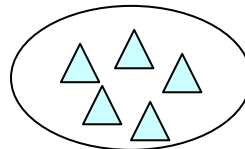
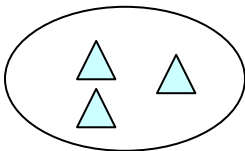
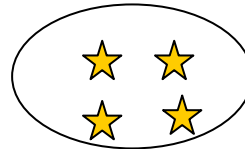
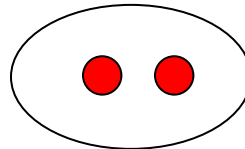
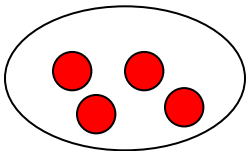
15.  $9 - 2 = 7$

### Exercise 6.4

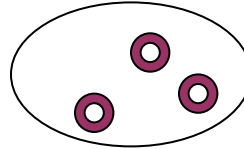
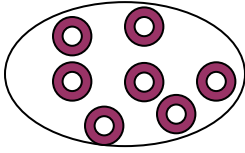
A number of two collections of objects are given below. Compare the two collections and mark a  $\checkmark$  under the collection that has more objects. Write how many more objects the bigger collection has.



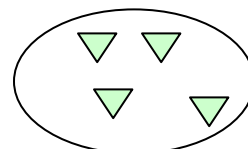
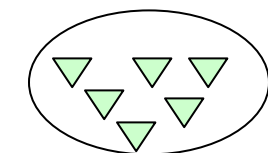
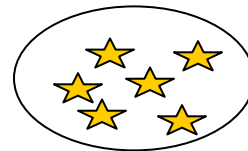
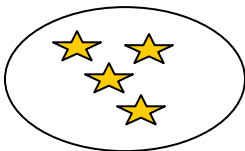
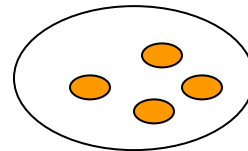
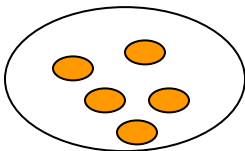
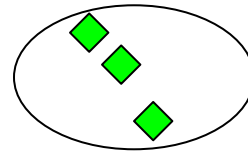
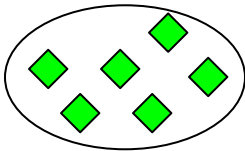
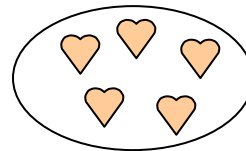
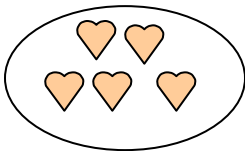
$\checkmark$       2 more



A number of two collections of objects are given below. Compare the two collections and mark a  $\checkmark$  under the collection that has fewer objects. Write how many fewer objects the smaller collection has.



$\checkmark$       4



## Exercise 6.5

Subtract. (You may use sticks or lines).

$$1. \quad 7 - 5 = 2$$

$$2. \quad 3 - 2 =$$

$$3. \quad 4 - 1 =$$

$$4. \quad 2 - 1 =$$

$$5. \quad 5 - 3 =$$

$$6. \quad 4 - 2 =$$

$$7. \quad 5 - 2 =$$

$$8. \quad 6 - 2 =$$

$$9. \quad 6 - 5 =$$

$$10. \quad 7 - 4 =$$

$$11. \quad 8 - 6 =$$

$$12. \quad 9 - 5 =$$

$$13. \quad 7 - 6 =$$

$$14. \quad 6 - 3 =$$

$$15. \quad 9 - 4 =$$

## Exercise 6.6

Solve word problems orally:

1. Rita had four sweets she gave two to her brother. How many sweets does she have now?
2. Abhay bought 3 balloons one got burst. How many balloons does he have now?
3. Runa had 4 rupees her mother gave her 5 rupees. How many rupees does she have now?
4. Gaurav has 2 rupees he wants to buy a chocolate costing 5 rupees. How many more rupees does he need?
5. Sunita has 4 dolls and Sushma has 2 dolls. Who has more dolls and how many more?
6. Sanjay wants to collect 6 caps of Campa cola to buy a gift. He has already collected 5 caps how many more does he need?
7. Ram has 7 toys and sham has 4 toys. Who has more toys and how many more?
8. There were 8 children in a group dance. If there were 4 girls in the dance. How many boys were there?
9. There were 5 crows and 3 sparrows on a tree. How many birds were there on the tree?
10. There were 6 sparrows on a tree 4 flew away. How many sparrows are there on the tree now?



## UNIT 7

### Concept of zero and numbers ten to twenty

#### Concept of zero as absence of objects

Hold some sticks in your left hand and no sticks in your right hand and ask children how many you have in each hand?

If we have no sticks in our right hand we say we have zero sticks in our right hand

Draw 3 lines, and ask how many lines are there? Then erase 1 and ask how many lines are left. Erase 1 and ask how many lines are left. Erase that too and ask how many lines are left. We can also say zero lines are left.

We write zero like this-0

Trace or write 0 in each cell.

0	0	0	0	0	0	0	0	0	0

#### Concept of numbers ten to twenty

In the table given on next page the numbers in the last row, indicate the number of squares shaded in each column.

0	1	2	3	4	5	6	7	8	9

These show that

1 is one more than \_\_\_\_

2 is one more than \_\_\_\_

3 is one more than \_\_\_\_

4 is one more than \_\_\_\_

5 is one more than \_\_\_\_

6 is one more than \_\_\_\_

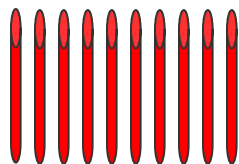
7 is one more than \_\_\_\_

8 is one more than \_\_\_\_

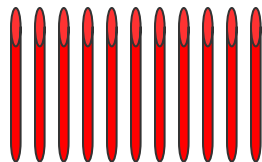
9 is one more than \_\_\_\_

Note each number is one more than the number before it. As many collections will have more than 9 objects. We need more numerals to be able to tell the number of objects in them in fact a different

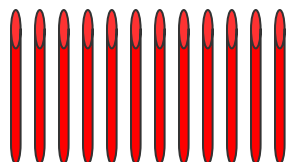
numeral for each collection as the number of objects increases by one. The numerals in order as the number of objects increases by one are as follows:



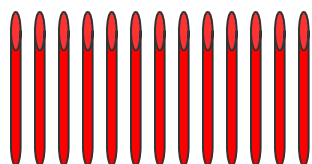
Nine and one more is ten - 10.



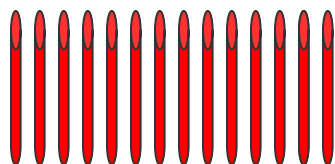
Ten and one more is eleven - 11.



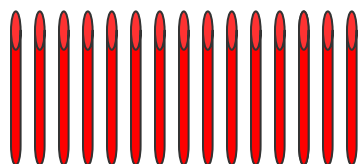
Eleven and one more is twelve - 12.



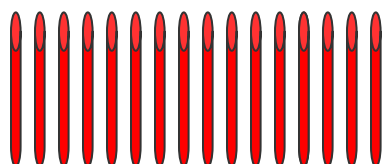
Twelve and one more is - 13.



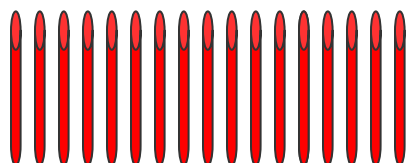
Thirteen and one more is fourteen - 14.



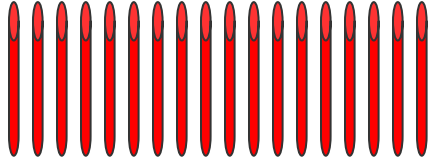
Fourteen and one more is fifteen - 15.



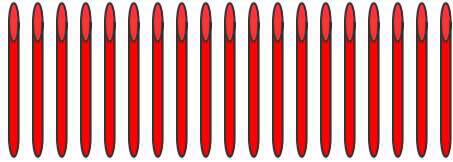
Fifteen and one more is sixteen - 16.



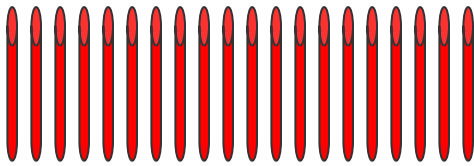
Sixteen and one more is seventeen - 17



Seventeen and one more is eighteen-18.



Eighteen and one more is nineteen - 19.



Nineteen and one more is twenty- 20

## Exercise 7.1

1. Count from 1 to 20.
2. Count back from 20 to 1.
3. Write numbers 1 to 20 and draw as many lines against each number

1	
2	

## Exercise 7.2

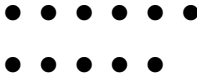
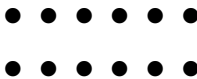
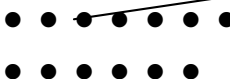
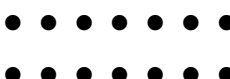
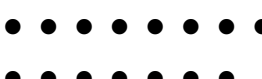

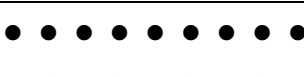
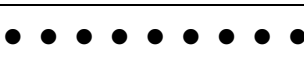
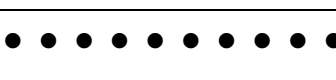
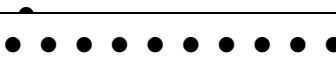
1. Set aside number of sticks given below  
7, 10, 12, 9, 15, 17, 20, 14, 16, 18, 13, 14, 18, 8, 19, 11, 20.
2. Draw as many lines as the number against it.

10	
15	
13	
12	
11	
16	
19	
14	
18	
20	
17	

3. Write the following numbers (to be dictated by the teacher):  
6, 8, 9, 7, 4, 1, 10, 2, 5, 3, 15, 11, 12, 13, 18, 14, 20, 19, 16, 17,  
10, 0, 15, 11, 13, 12, 18, 14, 17, 20, 19, 7, 6, 18, 15, 9

### Exercise 7.3

Match the numbers on the right with dots on the left by drawing lines between them:

	11
	13
	15
	18
	12
	19
	16
	11
	14
	20

### Exercise 7.4

Write  
numbers that  
come just  
after the  
following  
numbers

9	10
17	
12	
15	
19	
0	
11	
16	
14	
13	
18	

Write  
numbers that  
come just  
before the  
following  
numbers

5	6
	13
	11
	18
	12
	17
	20
	16
	1
	15
	19

Write numbers that  
come between the  
following numbers

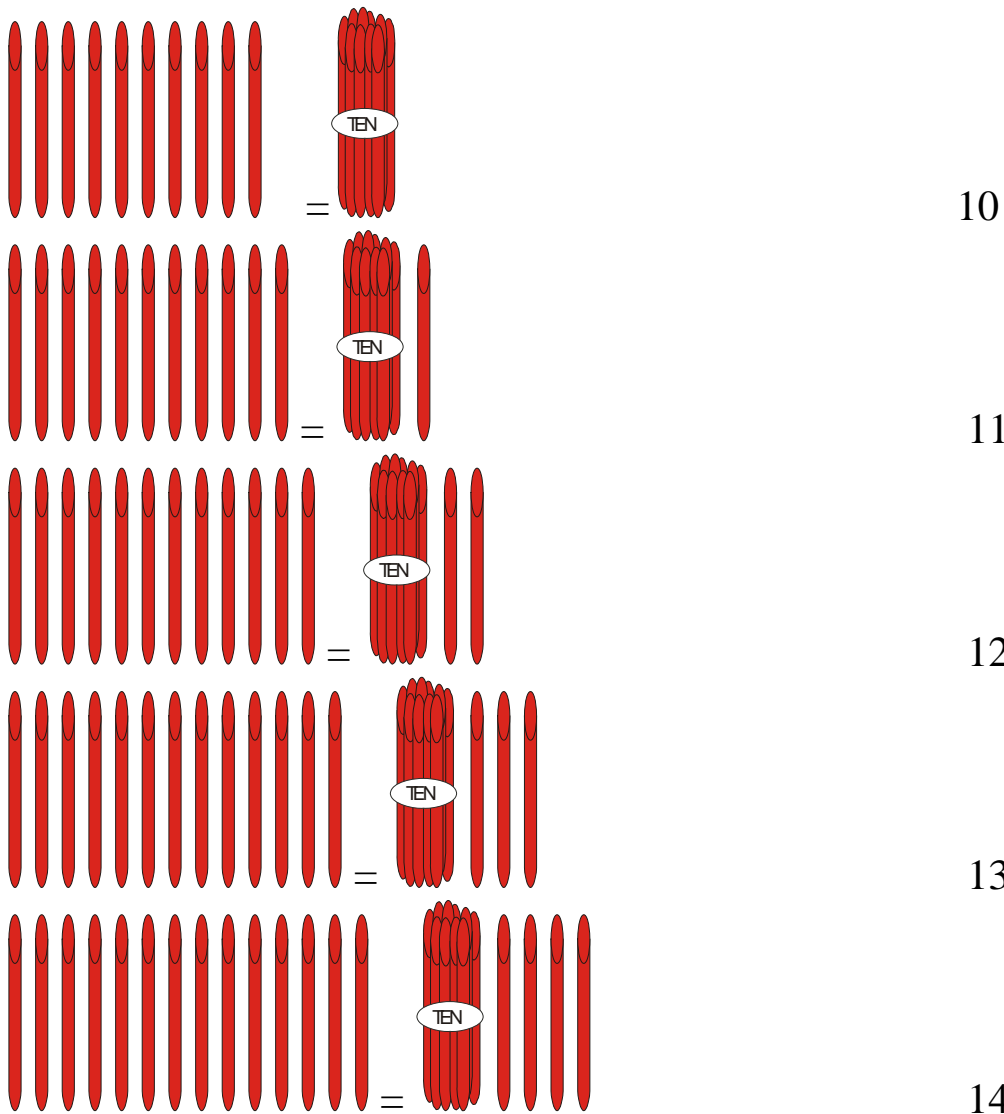
6	7	8
13		15
17		19
14		16
10		12
11		13
15		17
0		2
18		20
16		18
17		19



## Concept of place value

As the number of objects increases it becomes cumbersome to count and compare them. If we group a certain number of objects, it becomes easier. Number system we use is based on ten.

If number of sticks greater than ten and we group ten sticks in a bundle by a rubber band, (Demonstrate it by grouping sticks) we would then have for 10 to 20 sticks




$$15 = 10 + 5.$$

Sixteen is six more than ten.	$16 = 10 + 6.$
Seventeen is seven more than ten.	$17 = 10 + 7.$
Eighteen is eight more than ten.	$18 = 10 + 8.$
Nineteen is nine more than ten.	$19 = 10 + 9.$
Twenty is ten more than ten or is equal to two tens	$20 = 10 + 10$

The objects can thus be counted by forming groups of ten. For example, for counting more than ten sticks first form bundles of ten sticks by using rubber bands and count the number of single sticks. If three sticks are left over after forming a bundle of ten then the number of sticks is thirteen as three more than ten is thirteen. Similarly, other collections of 11 to 19 sticks can be counted.

The pictures of objects can be counted in the same manner by enclosing ten objects in a rectangle or oval.

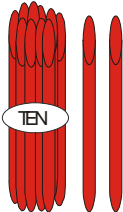
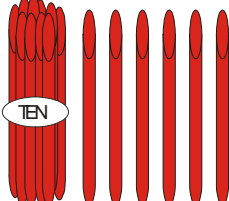
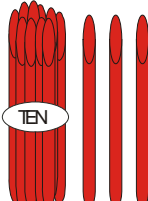
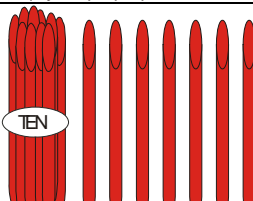
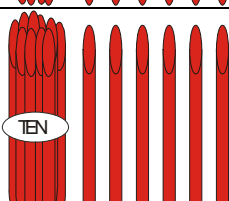
Also note that method of writing numbers is based on grouping by ten, the numeral on the left represents the numbers of tens and the numeral on the right the number of ones. This enables us to write all numbers by learning only to write ten numerals-0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. These are called **digits**.

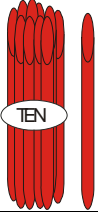
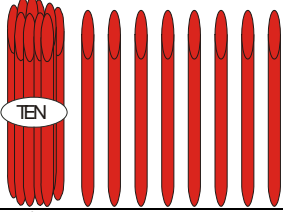
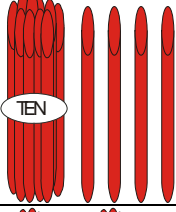
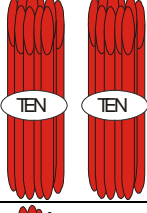
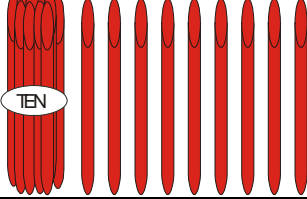
### **Concept of zero as a placeholder**

Note if we have ten sticks and ten bundles are made we have one bundle of ten sticks and no sticks are left over. One and zero in 10 denotes one bundle of ten sticks and zero loose sticks. Similarly if we have twenty sticks and bundles of ten sticks are made we have two bundles of ten sticks and no sticks are left over. Two and zero in 20 denote two bundles of ten-sticks and zero loose sticks. Zero here is used as a placeholder so that 1 in 10 or 2 in 20 denote tens.

## Exercise 7.5

1. Show the following numbers of sticks using single sticks and bundles of 10 sticks if the number is greater than 9  
5, 8, 4, 9, 7, 3, 15, 13, 17, 11, 10, 14, 18, 12, 20, 19, 16
2. A number of group of ten objects and single objects are given below, write the number of tens and ones and total number of objects:

Objects	Tens	Ones	Number
	1	2	12
			
			
			
			

Objects	Tens	Ones	Number
			
			
			
			
			

## **Comparison of two collections**

We can compare two collections of objects by matching. A collection in which some objects are left has more objects and the other fewer. If all objects are matched then one collection has as many objects as the other. If we have two collections of pictures we can match them by drawing lines matching each object of one collection with one and a different object of the other collection.

Ask children to compare two collections of objects such as blocks, sticks, chips by asking questions such as:

Tell which of the two collections has more objects?

Tell which of the two collections has fewer objects?

Set aside as many objects as sticks, blocks etc. in a given collection.

Ask questions requiring comparison of objects in their surroundings such as

Are there as many children as chairs in the classroom?

Are there fewer doors or windows in the classroom?

Are there more doors or windows in the classroom?

### Exercise 7.1

1. Draw as many 0s as lines shown against them:

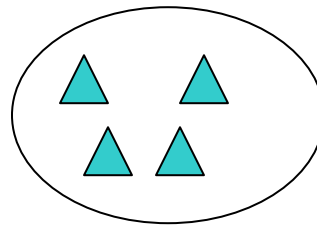
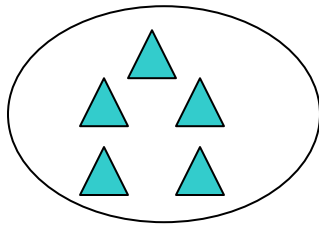
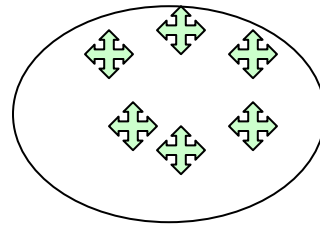
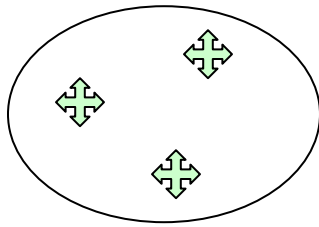
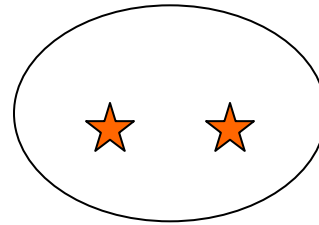
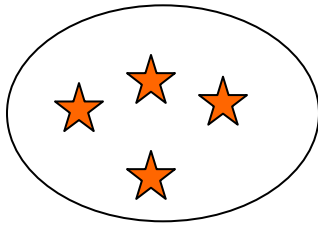
|||    0 0 0

||

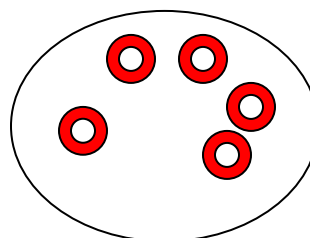
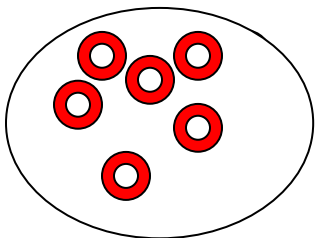
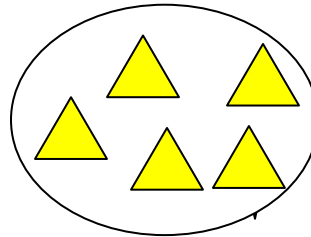
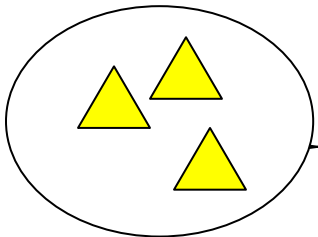
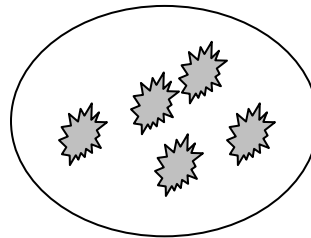
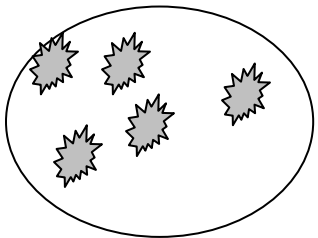
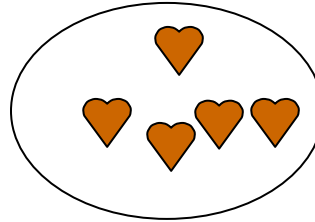
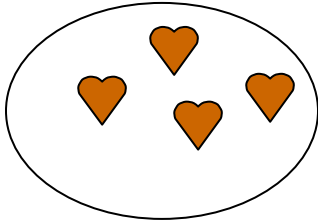
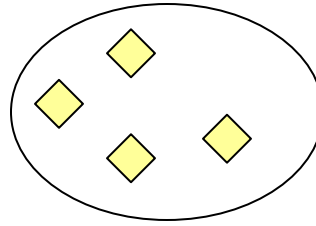
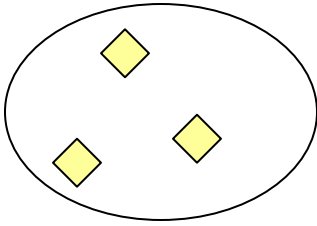
|||||

||||||

2. Mark a  $\checkmark$  under the collection that has more objects



3. Mark a  $\checkmark$  under the collection that has fewer objects



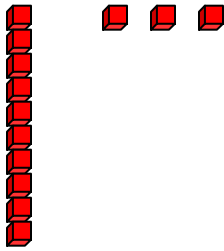


## **Comparing collections in which items are grouped by ten**

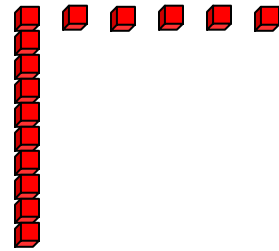
Grouping by ten also makes comparison of collections that have 10 to 20 objects say sticks easy. If both collections have one ten bundle comparison of only the loose sticks tells which collection has more objects. If one collection has more ten bundles then that collection has greater number of sticks than the other collection. Give examples.

## Exercise 7.2

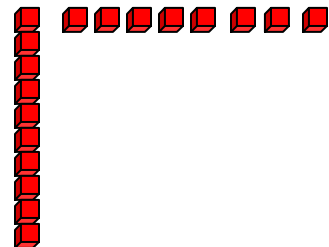
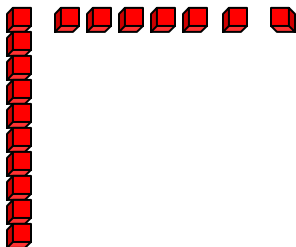
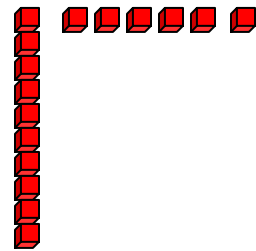
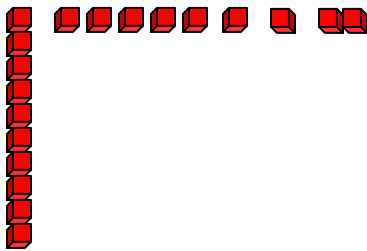
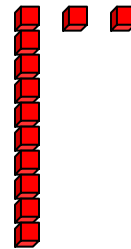
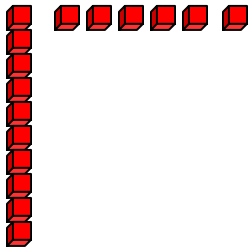
A set of two collections of objects are given below, write the number of objects in each collection and mark a  $\checkmark$  under the collection that has more objects



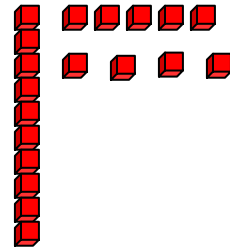
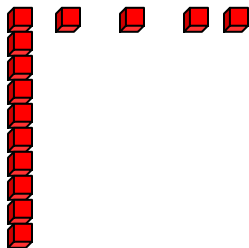
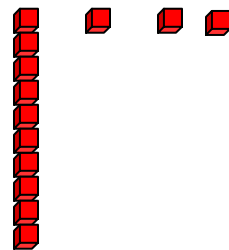
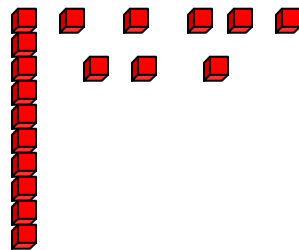
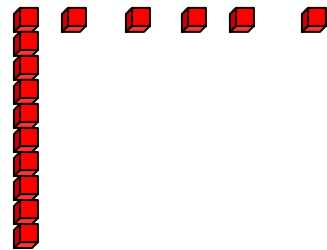
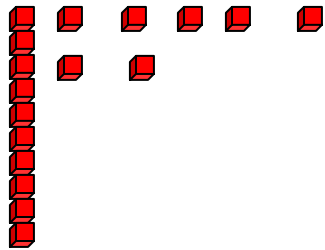
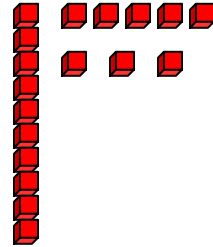
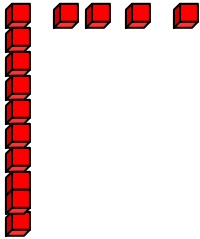
13



15  $\checkmark$



A set of two collections of objects are given below, write the number of objects in each collection and mark a  $\checkmark$  under the collection that has fewer objects



## UNIT 8

### Addition of two one-digit numbers

We can add two numbers say 3 and 5 by any of the following methods.

1. Set aside 3 sticks and 5 sticks in two separate heaps then combine the two heaps and count all the sticks. As the count is 8. Therefore  $3 + 5 = 8$ .
2. Draw 3 lines ||| and 5 lines ||||| and count all the lines. As the count is 8, therefore  $3 + 5 = 8$ .

## Exercise 8.1

Write as many numbers in counting from the following numbers as the  $\square$  given and add the given numbers on the right:

4	$\square$ 5	$\square$ 6	$\square$ 7	$4 + 3 = 7$
---	-------------	-------------	-------------	-------------

2	$\square$	$\square$	$2 + 2 =$
---	-----------	-----------	-----------

1	$\square$	$\square$	$\square$	$1 + 3 =$
---	-----------	-----------	-----------	-----------

3	$\square$	$\square$	$\square$	$\square$	$3 + 4 =$
---	-----------	-----------	-----------	-----------	-----------

4	$\square$	$\square$	$\square$	$\square$	$4 + 4 =$
---	-----------	-----------	-----------	-----------	-----------

7	$\square$	$\square$	$7 + 2 =$
---	-----------	-----------	-----------

3	$\square$	$\square$	$\square$	$\square$	$3 + 4 =$
---	-----------	-----------	-----------	-----------	-----------

What did you notice?

We can also add by counting forward from one number as many numbers in order as the second number and the last number gives the sum. For example to add 4 and 2, we count 2 numbers after 4-5 and 6. The last number gives the sum of two numbers.

## Exercise 8.2

Add the following numbers:

$5 + 1 = 6$

$1 + 5 = 6$

$3 + 4 = \underline{\quad}$

$4 + 3 = \underline{\quad}$

$2 + 6 = \underline{\quad}$

$6 + 2 = \underline{\quad}$

$1 + 2 = \underline{\quad}$

$2 + 1 = \underline{\quad}$

$2 + 3 = \underline{\quad}$

$3 + 2 = \underline{\quad}$

$3 + 5 = \underline{\quad}$

$5 + 3 = \underline{\quad}$

$6 + 4 = \underline{\quad}$

$4 + 6 = \underline{\quad}$

$8 + 1 = \underline{\quad}$

$1 + 8 = \underline{\quad}$

$6 + 3 = \underline{\quad}$

$3 + 6 = \underline{\quad}$

$8 + 4 = \underline{\quad}$

$4 + 8 = \underline{\quad}$

What did you notice?

The order of numbers does not matter; we can count forward from larger number as many numbers in order as the smaller number.

The last number gives the sum. For example to add 2 and 6, instead of counting 6 numbers from 2 - 3, 4, 5, 6, 7, and 8 we can count 2 numbers from 6- 7 and 8. As the last number is 8 in both cases, therefore  $2 + 6 = 6 + 2 = 8$ .

### Exercise 8.3

Add the following numbers:

$$\begin{array}{rclcl} 5 & + & 0 & = & 5 \\ 3 & + & 0 & = & \underline{\hspace{1cm}}. \\ 4 & + & 0 & = & \underline{\hspace{1cm}}. \\ 2 & + & 0 & = & \underline{\hspace{1cm}}. \\ 1 & + & 0 & = & \underline{\hspace{1cm}}. \\ 8 & + & 0 & = & \underline{\hspace{1cm}}. \\ 7 & + & 0 & = & \underline{\hspace{1cm}}. \\ 9 & + & 0 & = & \underline{\hspace{1cm}}. \\ 6 & + & 0 & = & \underline{\hspace{1cm}}. \\ 0 & + & 0 & = & \underline{\hspace{1cm}}. \end{array}$$

What did you notice?

Any number + 0 = the number.

Add the following numbers:

$$1 + 1 = 2$$

$$2 + 1 =$$

$$3 + 1 =$$

$$4 + 1 =$$

$$5 + 1 =$$

$$6 + 1 =$$

$$7 + 1 =$$

$$8 + 1 =$$

$$9 + 1 =$$

$$12 + 1 =$$

$$15 + 1 =$$

$$17 + 1 =$$

What did you notice?

Any number + 1 = the number that comes just after the number.



### Exercise 8.4

Solve word problems orally and tell how you got the answer.

1. Rani had 5 rupees, her mother gave her 5 Rupees more. How many Rupees does she have now?
2. Anuj had 4 toys; he got 5 toys on his birthday. How many toys does he have now?
3. Sunita is 2 years older than his brother. If her brother is 5 years old, what is Sunita's age?
4. Gaurav bought a book costing 8 rupees and a notebook costing 5 rupees. How much did he spend in all?
5. Sadhna climbed 9 steps and then 4 more steps after a turn. How many steps did she climb in all?
6. Rahul's mother bought 6 bananas and 4 apples. How many fruits did she buy?
7. There are 4 girls and 4 boys in a group song. How many children are there in the group song?
8. There were 5 ducks in a pond, 3 more ducks came and joined them. How many ducks are there in the pond now?
9. I am a number 2 more than 5. Who am I?
10. What number added to itself gives 4.

## Methods for adding numbers

We can add two numbers say 3 and 5 by any of the following methods.

1. Set aside 3 sticks and 5 sticks in two separate heaps then combine the two heaps and count all the sticks. As the count is 8. Therefore  $3 + 5 = 8$ .
2. Draw 3 lines ||| and 5 lines ||||| and count all the lines. As the count is 8, therefore  $3 + 5 = 8$ .
3. Count forward 3 numbers from 5 or 5 numbers from 3. Which would you prefer and why?

## Exercise 8.5

Add

$$\begin{array}{r} 4 \\ +3 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 5 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +1 \\ \hline \end{array}$$

$$\hline$$

$$\begin{array}{r} 5 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +2 \\ \hline \end{array}$$

$$\hline$$

$$\begin{array}{r} 5 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +6 \\ \hline \end{array}$$

$$\hline$$

$$\begin{array}{r} 3 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +3 \\ \hline \end{array}$$

$$\hline$$

$$\hline$$

$$\hline$$

## UNIT 9

### Subtraction Facts

We can subtract two numbers by using any of the following aids:

1. We can subtract 3 from 7 by setting aside 7 sticks and taking away 3 from these and counting the remaining ones which gives the difference. As 4 are left, therefore  $7 - 3 = 4$ .
2. We can draw 7 lines |||||, then strike off 4 lines |||+++ and count the remaining ones which gives the difference. As 4 are left, therefore  $7 - 3 = 4$ .

### Exercise 9.1

Write numbers in counting back from the following numbers and subtract the given numbers.

4

$4 - 3 = 1$

2

$2 - 1 =$

6

$6 - 3 =$

13

$13 - 4 =$

18

$18 - 2 =$

14

$14 - 4 =$

17

$17 - 2 =$

What did you notice?

We can subtract by counting back as many digits as the number to be subtracted, the last number gives the difference. For example to

subtract 3 from 6 we count back 3 numbers in order 5, 4, 3. The last number 3 gives the difference. Therefore  $6 - 3 = 3$ .

Subtract

$$5 - 0 = 5$$

$$7 - 0 =$$

$$8 - 0 =$$

$$2 - 0 =$$

$$10 - 0 =$$

$$15 - 0 =$$

What did you notice?

Subtracting 0 from any number gives the number.

Subtract

$$4 - 1 = 3$$

$$7 - 1 =$$

$$8 - 1 =$$

$$5 - 1 =$$

$$10 - 1 =$$

$$15 - 1 =$$

What did you notice?

Subtracting 1 from any number gives the number that comes just before it.



## Exercise 9.2

Find

$4 + 2 = 6.$

$6 - 2 =$

$6 - 4 =$

$2 + 1 = 3$

$3 - 1 =$

$3 - 2 =$

$2 + 3 = 5$

$5 - 2 =$

$5 - 3 =$

$5 + 2 = 7$

$7 - 2 =$

$7 - 5 =$

$3 + 3 = 6$

$6 - 3 =$

$6 + 2 = 8$

$8 - 2 =$

$8 - 6 =$

$4 + 3 = 7$

$7 - 4 =$

$7 - 3 =$

$5 + 3 = 8$

$8 - 5 =$

$8 - 3 =$

$6 + 3 = 9$

$9 - 6 =$

$9 - 3 =$

$5 + 4 = 9$

$9 - 5 =$

$9 - 4 =$

$8 + 6 = 14$

$14 - 8 =$

$14 - 6 =$

$8 + 7 = 15$

$15 - 8 =$

$15 - 7 =$

$7 + 6 = 13$

$13 - 6 =$

$13 - 7 =$

$9 + 6 = 15$

$15 - 9 =$

$15 - 6 =$

$8 + 9 = 17$

$17 - 9 =$

$17 - 8 =$

$9 + 9 = 18$

$18 - 9 =$

What did you notice?

Addition and subtraction facts are related e.g.  $4 + 5 = 9$ ,  $9 - 4 = 5$ ,  $9 - 5 = 4$

The facts that contain the same numbers are called fact families e.g.  $4 + 5 = 9$ ,  $5 + 4 = 9$ ,  $9 - 4 = 5$ ,  $9 - 5 = 4$ .

Memorising these together aids in learning addition and subtraction facts

.

### Exercise 9.3

Find

1.  $7 - 4 = 3$

$7 - 3 = 4$

2.  $3 - 2 =$

$3 - 1 =$

3.  $4 - 1 =$

$4 - 3 =$

4.  $5 - 2 =$

$5 - 3 =$

5.  $9 - 2 =$

$9 - 7 =$

What did you notice?

Given the subtraction facts on the left find those on the right mentally

1.  $10 - 4 = 6$

$10 - 6 =$

2.  $11 - 4 = 7$

$11 - 7 =$

3.  $11 - 5 = 6$

$11 - 6 =$

4.  $12 - 3 = 9$

$12 - 9 =$

5.  $12 - 5 = 7$

$12 - 7 =$

6.  $13 - 6 = 7$

$13 - 7 =$

7.  $13 - 4 = 9$

$13 - 9 =$

8.  $15 - 7 = 8$

$15 - 8 =$

9.  $16 - 7 = 9$

$16 - 9 =$

### Exercise 9.4

Solve the following word problems

1. There were 5 birds sitting on a tree 2 birds flew away. How many birds are on the tree now?
2. Sunita had 6 bangles 2 of those were broken. How many bangles does she have now?
3. Avani had 5 dolls she got 3 more dolls on her birthday. How many dolls does she have now?
4. Rajiv had 4 toffees he ate 2 of them. How many toffees does he have now?
5. There were 10 children in a group dance. If 4 of these are boys how many girls are in the dance?
6. Anil has 7 toys while Sunil has 10 toys. Who has more toys and how many more?
7. Ranjana has 4 rupees less than her brother. If her brother has 14 rupees how many rupees does Ranjana have?
8. There are 7 crows and 4 sparrows on a tree. How many birds are on the tree?
9. Anita has 5 rupees; she wants to buy a chocolate costing 7 rupees. How many more rupees does she need?
10. There are 7 girls and 12 boys in a class. Are there more girls or boys and how many more?

## Exercise 9.5

Subtract

$$\begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 6 \\ - 4 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ - 1 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ - 2 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ - 1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ - 1 \\ \hline \end{array}$$

$$\hline$$

$$\begin{array}{r} 7 \\ - 4 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ - 1 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ - 3 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ - 4 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 2 \\ \hline \end{array}$$

$$\hline$$

$$\begin{array}{r} 10 \\ - 3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ - 3 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \\ - 5 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ - 4 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \\ - 6 \\ \hline \end{array}$$

$$\hline$$

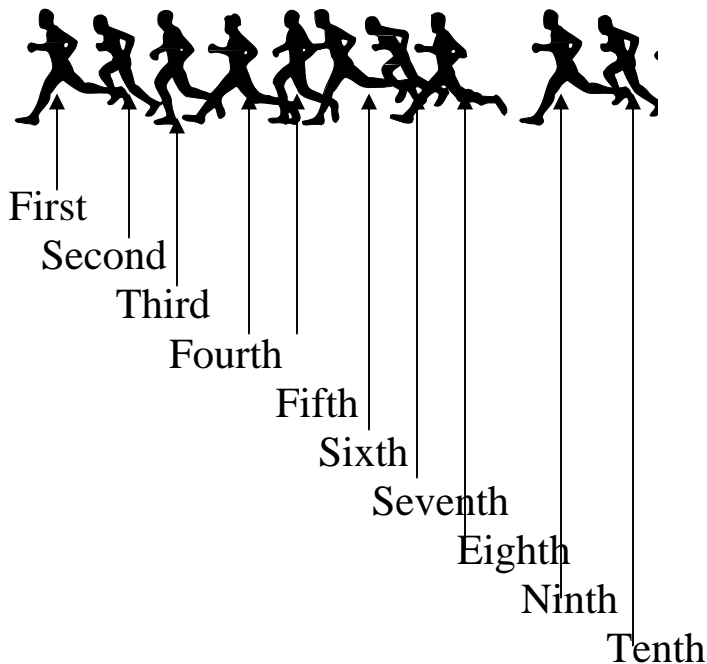
## UNIT 10

### Ordinal numbers

Ask ten students to form a queue and ask such questions as: Who is just after Rajat in the queue? Who is just before Varun in the queue? Who is between Meeta and Karan in the queue?

We describe the position of different children in the queue by using number words first, second, third, and so on. Describe the queue by naming children in various positions.

The position of different runners in a race is as follows:



Similarly when doing something requires many steps in order such as in taking a bath, the step you start with is called first, the next step second, the one that follows it third and so on. Give examples

Some things like days in a week always come in a certain order

If we take Monday as the first day of the week

Tuesday is the second day of the week.

Wednesday is the third day, of the week.

Thursday is the fourth day of the week.

Friday is the fifth day of the week.

Saturday is the sixth day of the week.

Sunday is the seventh day of the week.

The second here is always second unlike counting objects in a collection in which any object can be counted as two.

## Exercise 10 .1

1. Ask ten students to form a line and ask children to name students who are in different positions such as third, sixth, eighth, tenth and so on.
2. Tell the steps in order in brushing your teeth.
3. Write 3 under the third runner, 6 under the sixth runner.



4. Write 2 under the second mouse, 5 under the fifth mouse.



5. Write 1 under the first, 4 under the fourth, 7 under the seventh and 9 under the ninth bird.

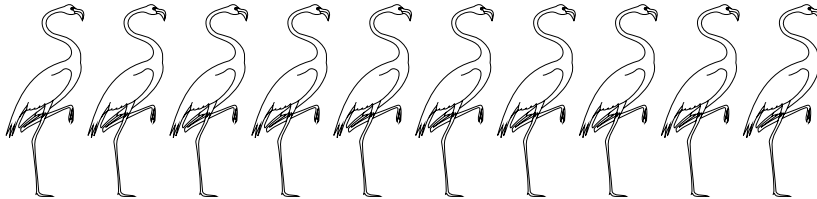




6. Write 2 under second, 4 under fourth, and 10 under the tenth bird.

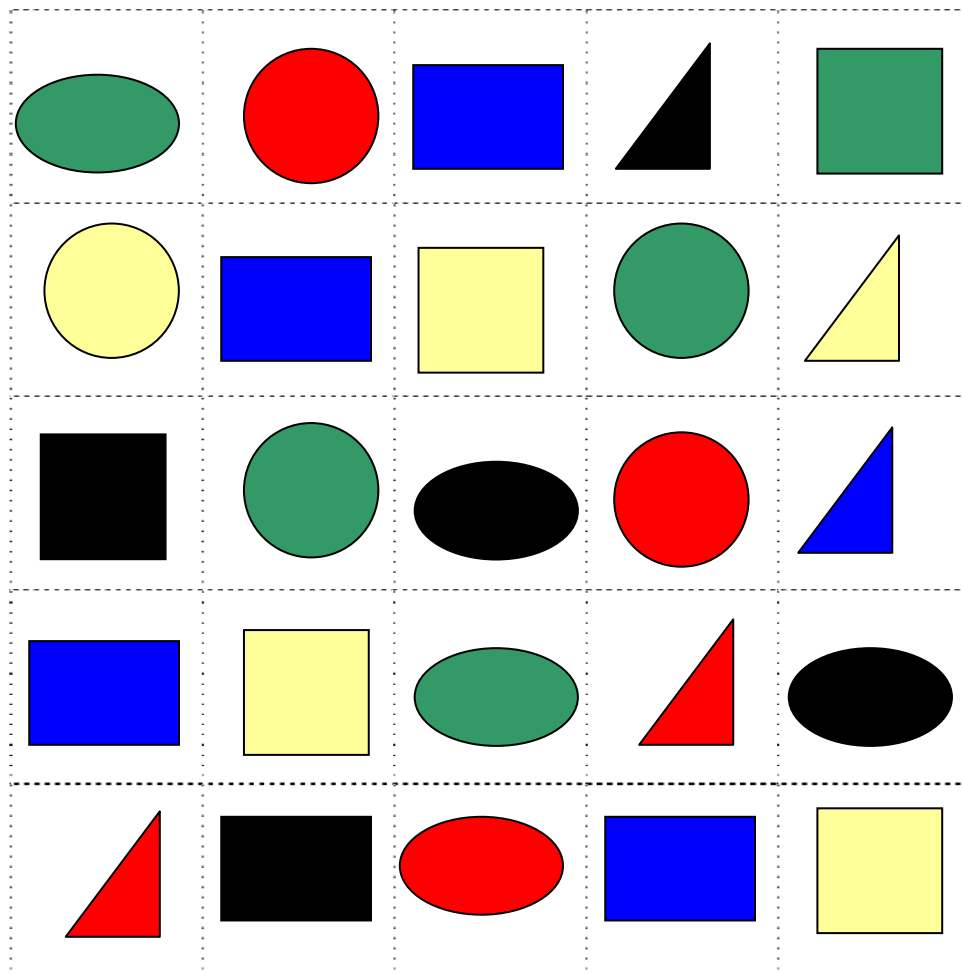


7. Colour the first, fourth, seventh and tenth bird yellow; second, fifth and eighth green; third, sixth and ninth blue.

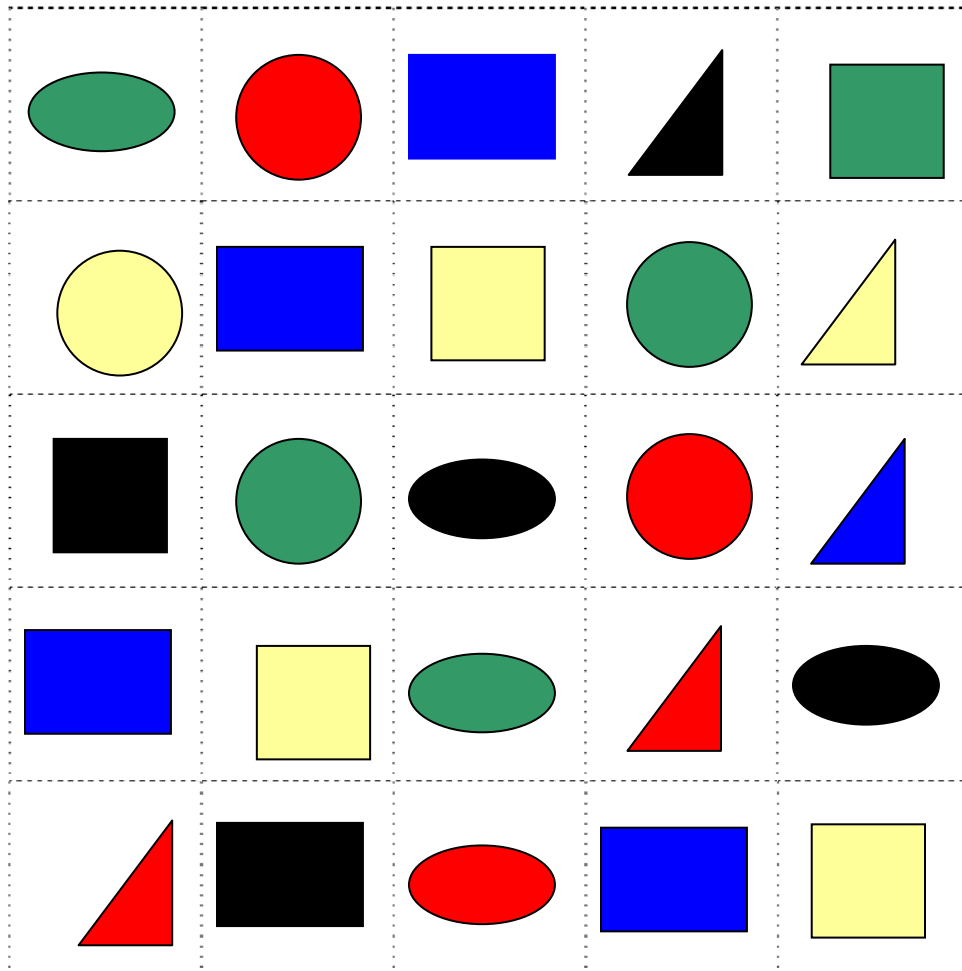


# ACTIVITY SHEETS

## Activity Sheet 1.1



## Activity Sheet 1.2



## Activity Sheet 2.1

